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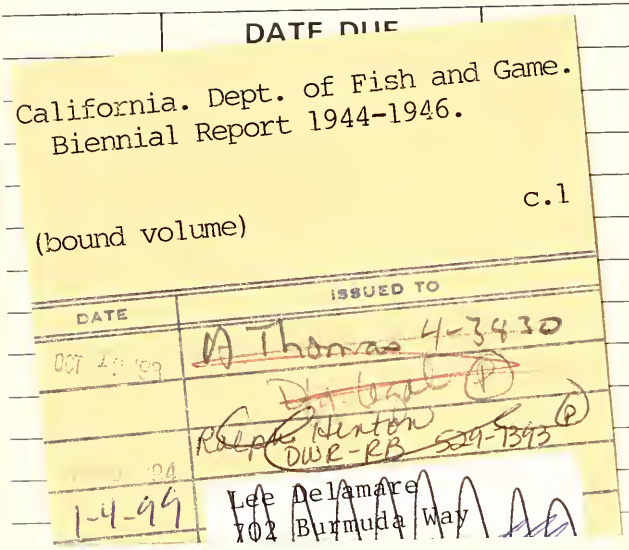

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STATE OF CALIFORNIA

DEPARTMENT OF NATURAL RESOURCES

WARREN T. HANNUM, DIRECTOR

THIRTY-NINTH BIENNIAL REPORT

OF THE DIVISION OF

FISH AND GAME

FOR THE YEARS 1944-1946

printed in CALIFORNIA STATE PRINTING OFFICE

72069

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DEDICATION

To state officials and legislators who have labored diligently to achieve a wise conservation policy for the protection of our natural resources, to the hunters, anglers and commercial fishermen who have harvested a portion of our crop of game and fish, and to other citizens who have enjoyed the great outdoors and association with the wildlife of the Golden State, this biennial report of accomplishments and progress is dedicated. May its perusal result in a firmer alliance of those who are striving for the protection and development of the wildlife resources of California.

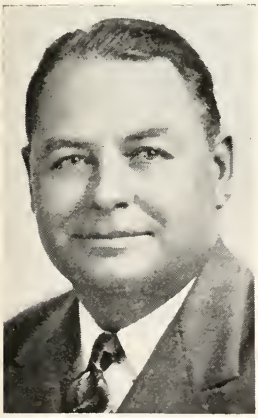
WARREN T. HANNUM
DIRECTOR OF NATURAL RESOURCES

LEE F. PAYNE
PRESIDENT, FISH AND GAME COMMISSION

WILLIAM B. WILLIAMS
COMMISSIONER

DOM A. CIVITELLO
COMMISSIONER

NATE F. MILNOR
COMMISSIONER



HARVEY E. HASTAIN
COMMISSIONER

WILLIAM J. SILVA
COMMISSIONER

EMIL J. N. OTT, JR.
EXECUTIVE SECRETARY

In Memoriam

H. L. "Toppy" Ricks
President
1946

IN MEMORIAM

Listed here are those faithful, self-sacrificing workers for wildlife conservation who, although they have departed during the past biennium, have left their spirit and their works with those who follow them.

H. L. Ricks----------January 31, 1946
John O'Connell----------December 5, 1946
Brice L. Hammack----------May 5, 1946
E. J. Johnson----------January 10, 1946
Eleanor Larios----------Unknown
Arthur Boeke----------Unknown
Newt Deck----------November 30, 1945
Joe K. Waite----------November 13, 1945
Victor Von Arx----------August 20, 1945
W. L. Hare----------July 13, 1945

"And, departing, leave behind us
Footprints on the sands of time;

"Footprints, that perhaps another,
Sailing o'er life's solemn main,
A forlorn and shipwrecked brother,
Seeing, shall take heart again."

—*Longfellow*

LETTER OF TRANSMITTAL

July 1, 1946

To His Excellency, Earl Warren
Governor of the State of California
Sacramento, California

Sir: We, the members of the Fish and Game Commission, respectfully submit the Thirty-ninth Biennial Report, covering the period July 1, 1944, through June 30, 1946.

The report is a brief resume of the activities of the Fish and Game Commission; a report by the Executive Secretary; and detailed reports of the functions of the various bureaus by their respective chiefs. There also are included complete fiscal reports and tabulations on fish and game management.

Respectfully submitted,

California Fish and Game Commission
Lee F. Payne, President
Wm. B. Williams
Harvey E. Hastain
Wm. J. Silva

REPORT OF FISH AND GAME COMMISSION

During the past biennium the Fish and Game Commission was composed of the following:

Nate F. Milnor, President
Dom A. Civitello
Lee F. Payne
H. L. Ricks
W. B. Williams

Personnel changes in the commission were effected during the past two years as follows:

Harvey E. Hastain appointed May 23, 1945, vice Nate F. Milnor, term expired.

William J. Silva appointed March 20, 1946, vice H. L. Ricks, deceased.

Dom A. Civitello, resigned March 19, 1946. General H. H. Arnold, retired, was appointed March 20, 1946, vice Dom A. Civitello. However, because of War Department Regulations, General Arnold was unable to officially accept the appointment until July 1, 1947.

Thus at the close of the biennium the commission was composed of the following:

Lee F. Payne, President	Los Angeles
W. B. Williams	Alturas
Harvey E. Hastain	Brawley
William J. Silva	Modesto
General H. H. Arnold, (Tentative)	Sonoma

It will be noted that the commission is now geographically representative of the sportsmen of the State.

The Division of Fish and Game felt the same effects of "war time" and "reconversion" as commercial agencies experienced. The shortage of personnel, material, supplies and equipment greatly hampered the operation of the division. However, with few exceptions all propagation facilities were operated at normal capacity and when the activities of the biennium are summarized it is found that the established trend of continued advancement was maintained and that progress was made in all fields. In spite of the numerous difficulties encountered during the period, more fish were planted and more game birds released than during any previous similar period.

The enactment of Chapter 648—Statutes of 1945, (Assembly Bill No. 395) by the State Legislature delegated to the commission certain regulatory powers. These regulatory powers, in effect, allow the commission to establish the seasons, bag limits and other regulations affecting the taking of the sporting species of fish and game. This is considered to be the most outstanding step of the biennium in the advancement of the management of these resources. Season, bag limits and regulations can now be established annually on a sound biological basis, so that the fish and game resources of the State can best cope with the demand placed upon it.

During the biennium it was found advisable to abolish the former Bureau of Engineering. This was effected on October 15, 1945. The construction work formerly under the jurisdiction of this bureau has been transferred to the Department of Public Works, Division of Architecture. The fish screen and ladder maintenance was transferred to the Bureau of Fish Conservation.

The Bureau of Patrol and Law Enforcement was faced with a most disheartening task. The fish and game resources under supervision of the bureau are widely scattered over the 155,652 square miles comprising the State. California's population approximated 9,000,000 during the war, and bureau functions were impeded by shortages of personnel, gas and oil, tires and other items essential to the effective patrol operations. However, an exceptional showing was made by the meager force of some 125 employees, as evidenced by the tabulation of arrests, fines and seizures to be found in the appendix of this report. (See Appendix, page 95.)

Wartime restrictions regulating the operation of boats placed the Bureau of Marine Fisheries in a very undesirable position. The Bureau of Marine Fisheries is charged with the management of the marine life in that portion of the Pacific Ocean adjacent to the State of California. With the operation of boats in these waters minimized, it was extremely difficulty to carry on the research activities necessary to manage this fishery. However, the bureau was able to maintain sufficient research activities to carry on the continuity of the majority of their studies.

A review of the happenings of the past five years which affect the fish and game resources, include the following:

The population of California has increased by approximately 2,000,000.

The population of California has become more outdoor minded, with a greater percentage buying hunting and fishing licenses each year.

Present day trends toward a shorter work week not only allow greater numbers to go hunting and fishing but those who in the past participated in these sports, now have more time to spend afield.

Higher prices and available markets have increased the demand on the commercial fishery.

Virtually no additional fish and game propagation facilities were acquired during this period.

Maintenance of existing fish and game propagation facilities has been almost nil.

Scientific and field studies have in many cases been suspended or greatly curtailed.

As an aftermath of the war there is an upward trend in fish and game violations.

The State Division of Fish and Game faces a tremendous task in bringing its services to a point of prewar effectiveness, but the future is bright.

The war and most of the reconversion is behind us.

Trained personnel has returned to the department.

Investigations and studies interrupted by the conflict can now be resumed.

Equipment and supplies again are available.

Programs already outlined indicate that the division will, during the next year, enjoy one of the most productive and worthwhile periods in its history.

REPORT OF THE EXECUTIVE SECRETARY

The Executive Secretary was charged with effecting, within the Division of Fish and Game the policies and operational procedures as laid down by the Fish and Game Commission, and in the absence of the commission, acted as chief of the division. For purposes of administration, operation and planning the activities of the division were subdivided as follows:

Office of Administration
Bureau of Patrol and Law Enforcement
Bureau of Marine Fisheries
Bureau of Fish Conservation
Bureau of Engineering*
Bureau of Game Conservation
Bureau of Game Farms
Bureau of Licenses

A suitable plan of organization has been worked out and the necessary reorganization of the division to bring it into conformity with this plan is gradually being effected. This reorganization must of necessity be slow; and complete reorganization is not contemplated before July of 1947. (See chart between pages 14 and 15.) The basic purpose behind this reorganization was to relieve bureau personnel of administrative duties. Bureau chiefs and their assistants are technical employees and should not be burdened with fiscal and personnel transactions.

PERSONNEL

The division was consistently faced with a shortage of personnel during the entire biennium. During the latter months, this shortage became less acute. During this period the salary ranges of most of our employees were revised and other adjustments are still being considered by the Personnel Board. These upward adjustments brought the pay scales of the division employees closer to conformity with pay scales of other agencies doing comparable work.

The following personnel changes in the biennium were deemed worthy of note:

Bureau of Patrol: During the fore part of the biennium, Mr. L. F. Chappell served as acting Chief of the Bureau of Patrol and Law Enforcement. On October 8, 1945, Mr. E. L. Macaulay returned from active military service and resumed his position as chief of this bureau, at which time Mr. Chappell returned to his former position as assistant chief in charge of the Marine Patrol. The following personnel of this bureau retired on the dates indicated:

Clarence Groat ---------- April 30, 1946
C. J. Walters ---------- June 30, 1946
L. T. Ward ---------- June 30, 1946

* The Bureau of Engineering was abolished September 1, 1945.

Bureau of Marine Fisheries: Dr. Richard Van Cleve served as Chief of the Bureau of Marine Fisheries from July 1, 1944, through February 26, 1946, at which time he resigned to accept a position with the Federal Government. Dr. Frances N. Clark served as acting chief of this bureau for the balance of the biennium.

Bureau of Fish Conservation: Mr. Allan Taft served as Chief of the Bureau of Fish Conservation for the entire period. The following personnel retired from active duty on the dates indicated:

William Berrian ----------February 13, 1945
Harvey A. Johnson ----------March 31, 1946
Clarence Ganter ----------April 30, 1946

Bureau of Engineering: John E. Spencer served as Chief of Bureau of Engineering through September 1, 1945, at which time the bureau was abolished. Mr. Spencer retired on April 8, 1946.

Bureau of Game Conservation: The senior employee of the Division of Fish and Game, Mr. J. S. Hunter, served as the Chief of the Bureau of Game Conservation during this biennium.

Bureau of Game Farms: The Bureau of Game Farms was headed by Mr. August Bade, who served as chief of this bureau from the period of July 1, 1944, through March 31, 1946, at which time Mr. Bade retired. Mr. Bade can truly be considered the father of our present game farm system, and his retirement, even though justly deserved, is regretted by those who served with him. The duties of the Chief of the Bureau of Game Farms were taken over on April 1, 1945, by Mr. Carlisle Van Ornum, who served in this category until the end of the biennium.

Bureau of Licenses: Mr. H. Russell Dunbar served as Chief of the Bureau of Licenses for the entire biennium.

CONSERVATION EDUCATION

During the war the use of motion pictures was determined to be the most efficient method of educating the greatest number of individuals in the shortest time. Realizing the tremendous need for education among the youth and adults of this State in matters concerning conservation of our wildlife, the commission approved a program of visual education.

During the past two years, even with shortages of men and materials, the program has progressed considerably. We now have approximately 28,600 feet of natural-color motion pictures showing: Trout hatcheries, methods of production, methods of planting; game bird farms and rearing pens, showing hatching, rearing and releasing; trapping coyotes and bobcats; quail watering devices; live-trapping and transplanting of beaver; the sardine industry; catching and canning of tuna; salmon investigations; and others of deer, elk, pheasants, sage hens, pigeons, doves, wild turkeys and antelope.

These films are as yet incomplete, all need to be titled and most of them are in need of further editing and additional subject matter.

Completion of present films as well as plans for additional ones has a high priority among the activities for the coming year. Showing of these films during the biennium approximated the following:

Schools	120
Sportsmen clubs	60
Service organizations	100
Other groups	50
Total showings	330

These showings have been curtailed by the limited personnel and equipment available for this work. The number of people reached by these showings is estimated at 35,000. And with an estimated 900,000 hunters and fishermen; and approximately 1,500,000 school children in the State, it can be seen that the surface has barely been scratched.

Publication of printed matter along educational lines has been nil during the war and reconstruction period. This was due to a request by the State Printer to curtail all printing, "not absolutely essential to the operation of the agency." Plans for the furtherance of this means of conservation education were being formulated at the close of the biennium and as soon as conditions permit, will be put into effect.

PUBLIC INFORMATION

The division's public information program which is closely associated with the conservation education program also suffered the ill effects of "wartime" conditions. However, the news sheet, *Outdoor California,* was maintained and issued weekly in mimeograph form. This release was sent to personnel of the Division of Fish and Game, newspapers, members of legislative and other groups. This program of public information needs to be expanded in order that all people interested in wildlife may know what is being done in wildlife protection, propagation and management and how they, the public, may help in this work. The inability of the division to keep the public informed of its activities and the reasons for them has resulted in numerous misunderstandings and unjust adverse criticism. This condition is in the process of being remedied through added appropriations and the reclassification of the position to which this work is assigned. By reason of this reclassification the division is now in a position to employ the type of artisan necessary to properly present our program to the public.

LIBRARY

During the biennium, the Division Library, located in the San Francisco office, continued to expand. It has now reached the point where it is recognized as one of the outstanding libraries of its type in the Country.

Arrangements for completion of the binding of bulletins and periodicals which have been delayed during the past five years have been completed. It is expected that all binding will be brought up-to-date within the next year.

The use of the library by outside agencies and students was about the same as the preceding biennium. However, with the increased number of students returning to their books in the last few months of the biennium it is expected that the demand placed on the library in the immediate future will set a new record.

PUBLICATIONS

The issuance of the quarterly *California Fish and Game* was continued during the biennium in spite of the shortage of personnel, paper, and kindred items. Included in these publications were 46 articles, fiscal statements, and recapitulations of arrests and fines. The 46 articles comprised 450 pages, and the average distribution of the quarterly was 4,000. It is expected that in the immediate future this publication will increase considerably, both in size and in distribution. A greater number of field employees and biologists will increase the number of articles worthy of publication, and the influx of students at schools, plus the increased interest of hunters and fishermen in field activities, will no doubt greatly increase the demand placed on the division for this quarterly.

LIAISON ACTIVITIES

Liaison activities were established and maintained with international, national, state and interstate organizations.

Personnel of the division have served on a number of committees and conferences, and delivered some very fine papers at these meetings.

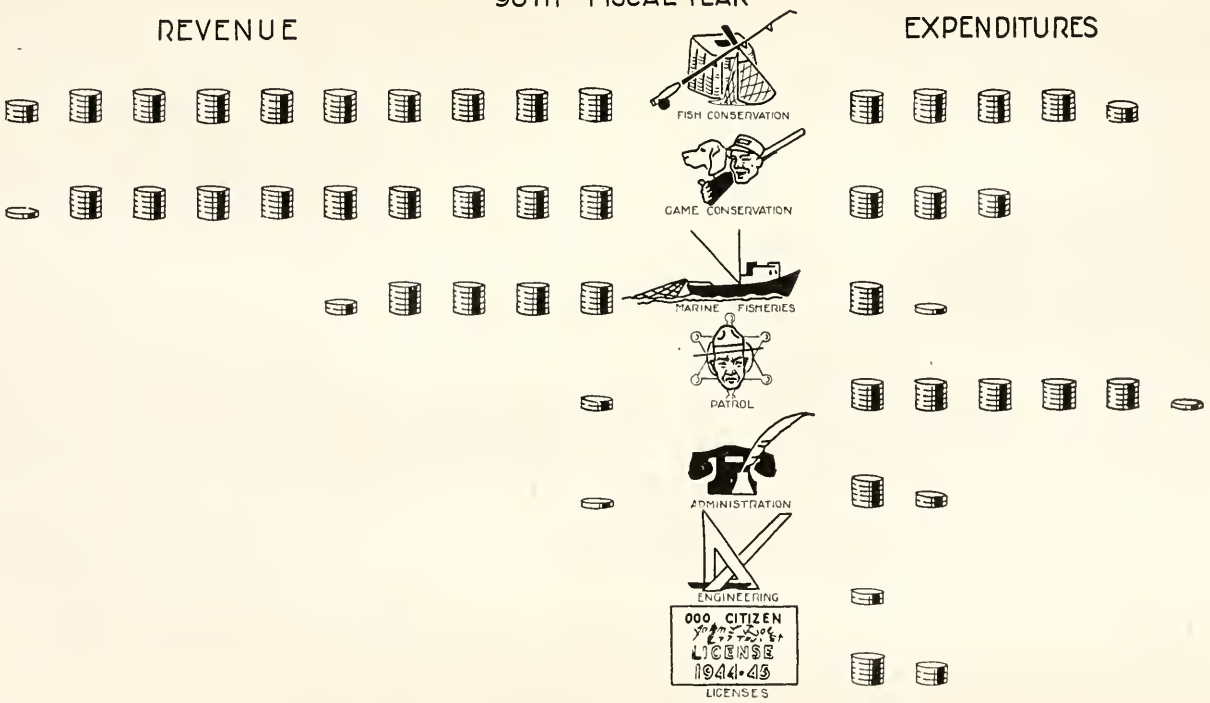
The executive secretary attended, during the biennium, the annual convention of the Western Association of Fish and Game Commissioners; the National Wildlife Conference as advisor to the Director of Natural Resources and helped in the formation of a Tri-State Compact between California, Oregon and Washington. He was California's delegate at a meeting of representatives of the Gulf and Atlantic States to study the off-shore fisheries of the United States, and was made a member of a nine-man committee; three from Sacramento, three from Gulf States and three from Atlantic States, to further study the needs of further protection on conservation of our state and national off-shore fisheries. In addition, he has been a member of the California State Department Fishery Committee and worked closely with the industry and the State Department in the formation of a treaty with Mexico to help conserve and protect the tuna industry from further exploitation.

FISCAL

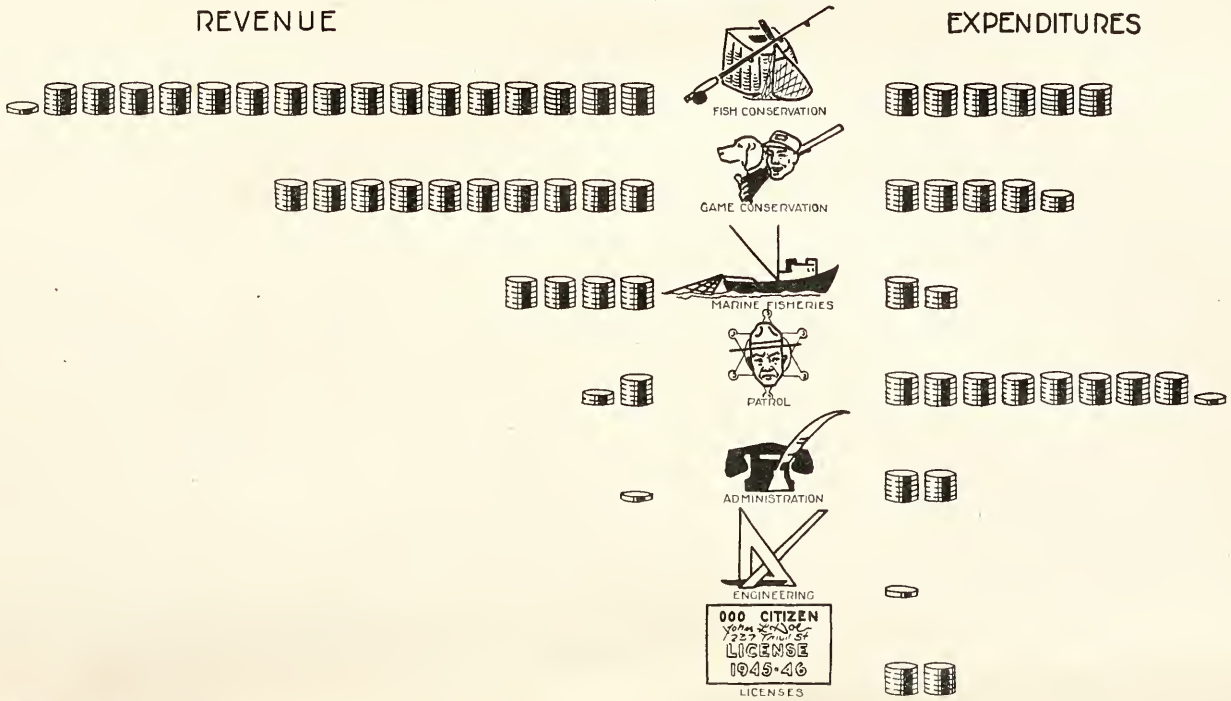
Complete financial statements for the biennium will be found in the appendix of this report. However, the following graphic charts will show in summary the receipts and disbursements for the two year period.

Attention is called to the fact that these charts are made up in accordance with the internal structure of the Division and Fish and Game and that in regard to purpose of expenditure, there is considerable overlapping of functions. That is, expenditures under Bureau of Patrol are directly related to the Bureau of Marine Fisheries as well as all other bureaus. Likewise there are other interrelated activities such as fish screens, between the Bureau of Marine Fisheries and the Bureau of Fish Conservation.

FISH AND GAME PRESERVATION FUND
RECEIPTS AND DISBURSEMENTS
96TH FISCAL YEAR



FISH AND GAME PRESERVATION FUND
RECEIPTS AND DISBURSEMENTS
97TH FISCAL YEAR

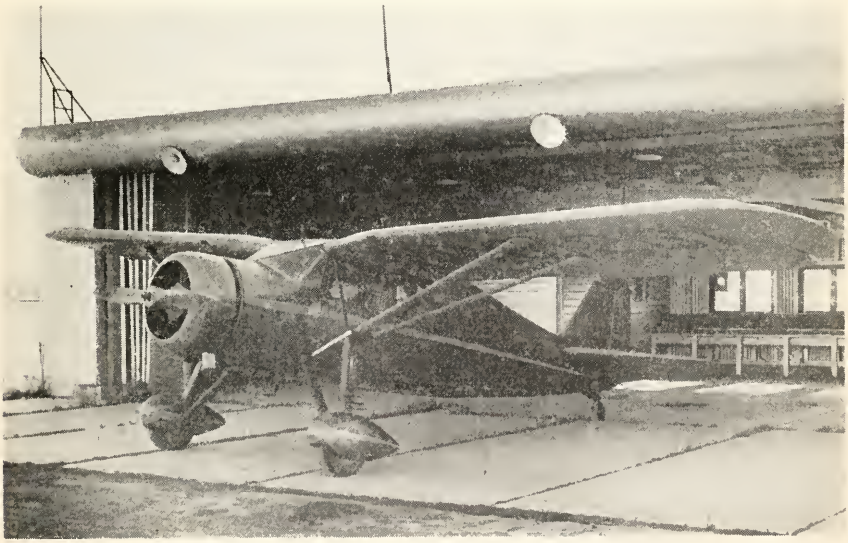


BUREAU OF PATROL AND LAW ENFORCEMENT

The Bureau of Patrol and Law Enforcement is the police force of the Division of Fish and Game. This bureau is charged with patrolling fish and game resources of the State, the apprehension of violators of the provisions of the Fish and Game Code and/or regulations of the Fish and Game Commission.

During the first year of the biennium, operations of the Bureau of Patrol and Law Enforcement were affected by gasoline rationing and shortage of manpower. With the lifting of gasoline restrictions on the cessation of hostilities in the Pacific area in August of 1945, an increase in hunting and fishing activities took place. Our automobile transportation was old, new cars were not available and new tires were in very short supply (some old prewar casings had been recapped as many as six and seven times). In spite of these handicaps an increase in arrests and fines was made over previous years.

The purchase of a four-passenger single engine plane during the biennium has proved very valuable in patrol, as well as assisting other bureaus in their field work. Fines resulting from arrests made in conjunction with this air patrol have more than paid the initial cost of the plane. In order to cover ocean water areas of the State, it is recommended that an amphibian plane be obtained during the next biennium, preferably a twin-engine job. This equipment will materially assist our high seas patrol.



Patrol plane of the Division of Fish and Game

All patrol boats taken over by the Federal Government were returned during the biennium except the *"Bluefin"* and *"Quinnat III."* The former vessel was lost off the Channel Islands and a satisfactory monetary settlement was made. The latter vessel still is operating for the government. Negotiations began in January, 1946, preparatory to returning the M. V. *"N. B. Scofield"* and were still under way at the close of the biennium.

Shortages of personnel continued during the biennium but men on military leave commenced returning in October, 1945. Eleven returned in October, six in November, eight in December, eight in January, three in February, two in March, two in April and one in May. At present only three members of the bureau are still absent on military leaves.

During the war, emergency temporary duration wardens appointments were made and examinations are scheduled early in the next biennium to fill these vacancies as well as the increase permitted in next year's budget. When eligible lists are available, it is proposed to hold a short school of instruction for newly appointed wardens. A warden's manual is in the hands of the printer and will be distributed at the same time as the school course.

A recapitulation of the arrests, fines and seizures will be found in the appendix, on page 95.

REPORT OF THE BUREAU OF MARINE FISHERIES

The Bureau of Marine Fisheries is responsible for the conservation and administration of the marine fisheries of California, both commercial and sport. In order to provide a basis for its recommendations to the Fish and Game Commission and ultimately to the Legislature, the bureau conducts biological and statistical research on the fisheries. Trends in fishing conditions, abundance, and availability of fish, economic factors influencing the industry, fishing methods, and related matters are followed closely. These studies are based on a comprehensive system of catch records which was instituted more than 30 years ago. Correlation of the statistical information with the biological data provides a background for the enactment of wise conservation measures which should result in a continued yield of fisheries products.

THE COMMERCIAL FISH CATCH

The commercial fisheries of California maintained their high level of production in 1944 and 1945. Heavy buying of fillets and canned fish by governmental agencies provided a stable outlet for marine products. With foreign sources of fish oil, meal, and vitamin oil cut off by the war, the demand for these products continued.

Total fish landings, and production of canned fish, oil, and meal for 1944 and 1945 are presented in Table I. (See appendix, page 102.)

The total landings of fish showed an increase of 275,000,000 pounds over the previous biennium. The pack of canned fish increased by 18 percent over the previous two years. The production of fish meal and oil was also greater. The value of the processed products was the highest on record.

On the whole the prices received by the fishermen remained at about the same level as in the previous biennium, although some upward revisions in price ceilings were made. Increased catches of some of the higher-priced species resulted in record total value figures. Table II (see appendix, page 102) presents the catches and value of the most important species of fish handled by California canneries, reduction plants, and fresh fish markets in 1944 and 1945. The values represent the prices paid to the fishermen at the time of delivery.

For the past several years the total value of the California fisheries has shown a steady rise (see Figure 1, page 22). The increase reflects a rise in prices, and a concentration on the more valuable species, both due in large measure to wartime expansion of markets.

Of the most important species, such fish as the sardine, albacore, skipjack, and mackerel maintained positions very nearly the same as in the previous biennium, both in quantity and value. The yellowfin tuna, which is second in total value only to the sardine, has shown a consistent increase in catch and value during the last four years, with landings nearly back to prewar levels. Catches of bluefin tuna, which often show

great variations, were nearly double those of the previous biennium. The foregoing species are utilized principally in canneries. The most important fish handled by the fresh fish markets is the salmon, catches of which were 80 percent greater than in 1942 and 1943.

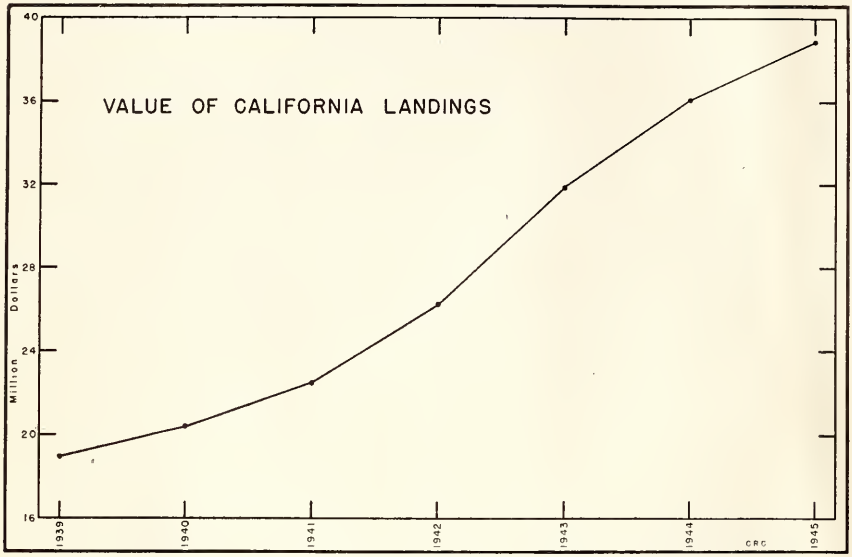


FIGURE 1. Value of California commercial fish catch, 1939-1945. Value represents amount paid to the fishermen at time of delivery

Spectacular increases were made in several hitherto minor fisheries. Development of a canning process for Pismo clams resulted in heavy shipments of these shellfish from Lower California. Within the short space of two years the Pismo clam rose from a position of insignificance to seventh place in the fisheries. This species of clam has been so seriously depleted on California beaches that severe restrictions have been placed on the diggers, and canning of local clams has been prohibited for many years.

Heavy wartime purchases of fresh and frozen fillets by the government, coupled with the great demand for liver oil, stimulated the Northern California trawl fishery. Development of a modified type of otter trawl permitted great increases in the catches of rockfish and sablefish. Rockfish showed a fivefold increase in landings, and the value was more than three times as great as in the previous biennium. The sablefish catch doubled, with a more than twofold increase in value. Sole, formerly the mainstay of the trawl fishery, experienced only moderate increases, and was far behind the rockfish and sablefish.

Another fishery to make great gains was the squid. In both 1944 and 1945 large quantities were canned at Monterey. Most of the squid was packed for government or United Nations Relief and Rehabilitation Administration order for export.

In contrast to the above fisheries, the shark catch showed a decline.

COMMERCIAL FISHERMEN

The numbers of commercial fishermen licensed in California during the years 1944-45 and 1945-46 are given in Table III. (See appendix, page 103).

The number of fishermen licensed in 1944-45 was approximately one thousand less than the previous year. Part of this drop probably reflects the elimination of persons who had obtained commercial fishing licenses in 1943-44 merely to help qualify for Coast Guard passes or extra rations of gasoline. During the following season the license sales returned to approximately the 1943-44 figure of nearly 12,000. In 1945-46 fishermen returning to the fishery from military service swelled the figures.

The region of residence of commercial fishermen operating in California is shown in Table IV. (See appendix, page 103.)

SARDINES

The sardine catch during the 1945-46 season was the smallest on record since the poor season of 1937-38. Landings showed a considerable drop from those of the 1944-45 season, which was above average.

Because of the great demand for canned fish, particularly for the armed forces and for United Nations Relief and Rehabilitation Administration, a large proportion of the sardine catch was canned. The 1945-46 case pack has been exceeded only by that of the 1941-42 season. (See Table V, appendix, page 104.)

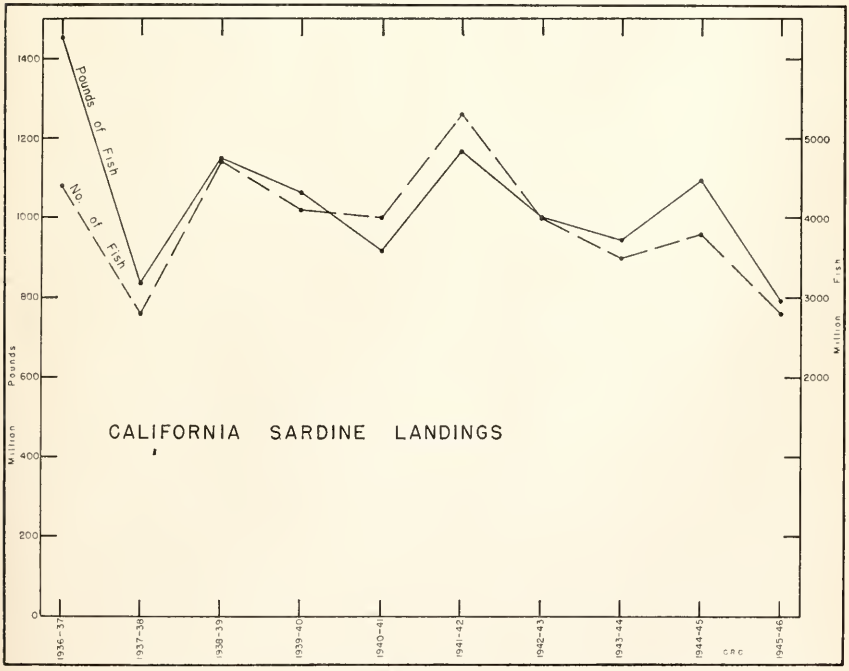


FIGURE 2. Tons and numbers of sardines landed at all California ports during the past 10 seasons. The figures include deliveries to floating plants from 1936-37 through 1938-39, when the floaters ceased operations. Although the greatest tonnage was landed in 1936-37, the greatest number of fish was taken in 1941-42.

The light catch of 1945-46, coupled with the use of greater than usual proportion of the fish for canning, resulted in the lightest production of sardine meal and oil since 1937-38. With all imports of meal and oil at a standstill, the demand for these products is far greater than the supply. The number of reduction plants operating under permit increased from 75 at the close of the last biennium to 85 during the 1945-46 season. The tonnage received under permit for straight reduction amounted to an average of 1,622 tons per plant during the 1945-46 season. This was only 35 percent of the allowable tonnage. During the 1944-45 season 71 percent of the allotted tonnage was used in reduction plants.

The wholesale value of processed sardines during the calendar year 1945 was $29,326,000. Of this amount, canned sardines accounted for $15,256,000. Sardine oil was valued at $7,992,000 and meal was worth $6,078,000.

Sardine canneries and reduction plants are located on San Francisco Bay, at Monterey and Moss Landing, and at Los Angeles-Long Beach Harbor. Small amounts of meal and oil are also produced at San Diego. (See Table VI, appendix, page 104.)

Sardine Investigations: Due to lack of personnel and equipment, no new investigations were inaugurated in the biennium. The routine sampling of the catch was carried on so that there need be no break in our measures of the size of fish in the catch. The cooperative study of age composition of the sardine was continued with the U. S. Fish and Wildlife Service. Another cooperative investigation carried on with this organization, and brought to completion in the biennium, comprised a detailed analysis of the catches of individual sardine boats over a ten-year period. The results have been published in Fish Bulletin No. 62.

No sardines were tagged, but tag recoveries from former releases continued. In the 1944-45 season two tags were returned in the San Francisco fishery which had been released in British Columbia waters by Canadian workers, and fourteen tags from tagging lots put out off the mouth of the Columbia River by the Oregon Fish Commission were recovered at San Francisco and Monterey. In addition, 228 California tags were re-taken; 20 in the British Columbia fishery, and 208 in the California fisheries. These represented releases made in California and Mexican waters. During the 1945-46 season three Oregon tags were recovered in the Monterey fishery. Of the California releases, eight were retaken in British Columbia, and 34 in the California fisheries.

Detailed studies were made of the tags returned over eight seasons, and the results were published in Fish Bulletin No. 61. These indicate a general intermingling of the sardine population between British Columbia and central Lower California. Because of this constant movement from area to area, use of tag returns to measure the size of the population did not prove successful. The rate of decline in the population from year to year was measured, however, both by tag returns and by age determinations. These were in satisfactory agreement, and for the next biennium age determinations only will be used for these studies since they require much less time and equipment. It is hoped that it will thus be possible to place more effort on studies of oceanographic conditions and their relation to spawning success and availability of sardines on the fishing grounds.

TUNA

Security restrictions and a shortage of boats hampered the tuna fishery during the early part of American participation in the war. However, by 1944 the rigid security regulations had been relaxed somewhat, and new boats had entered the fishery, so that the high seas fleet was able to make greater catches of yellowfin tuna. The improved yellowfin fishery coupled with exceptionally good catches of albacore and bluefin resulted in total tuna landings almost as great as those of the years immediately preceding the war. The 1945 catch of the four most important species of tuna (yellowfin, albacore, bluefin, and skipjack) amounted to 163,000,000 pounds. This figure has been exceeded only in 1939 and 1940 when landings of approximately 165,000,000 and 196,000,000 pounds, respectively, were recorded.

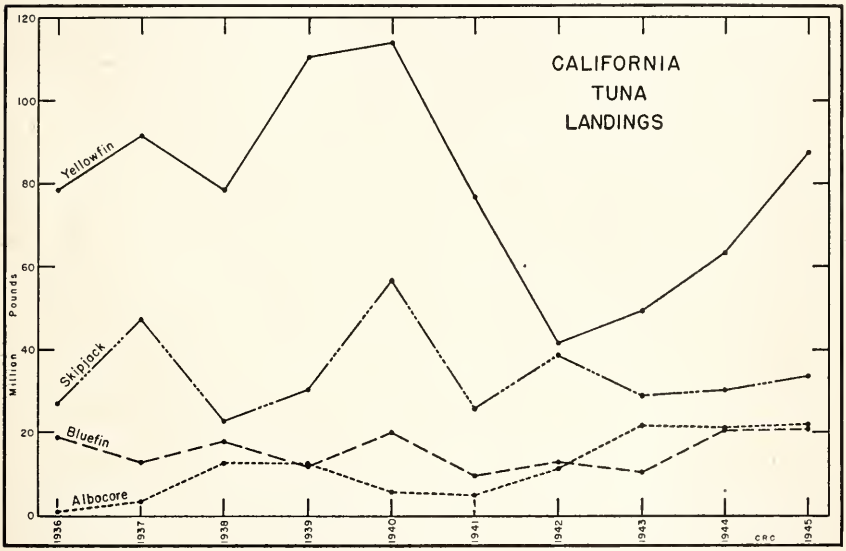


FIGURE 4. California landings of Yellowfin tuna, Skipjack, Albacore and Bluefin tuna, 1936-1945. Graph includes catches made by California boats and shipments from Oregon, Washington and Latin America; shipments from Japan, 1936-1941, are not included.

Catches of the five species of tuna in 1944 and 1945 are shown in Table VII. The case pack of tuna for the same years is presented in Table VIII. Production of canned tuna was supplemented by yellowtail which was packed tuna-style in the following amounts: 19,848 cases in 1944, and 17,336 cases in 1945. Tuna canneries are located at San Diego and Los Angeles-Long Beach Harbor. (See Tables VII and VIII, appendix, pages 104, 105.)

Tuna Investigations: During the war years the entire staff assigned to the tuna investigation left state service, with the result that research came to a standstill. Shortly before the close of the biennium the man who had been in charge of the investigations returned from war service, and work was resumed on the analysis of boat catches and on the racial composition of the tuna populations.

MACKEREL

The mackerel fishery has shown wide variations in seasonal catches ever since its inception in 1928. Landings reflect not only economic conditions and availability of fish, but the competition of other fisheries. During the sardine season the moderately-priced and moderately-abundant mackerel is fished as a side issue to the lower-priced but more abundant sardine. When sardines can be taken in great quantities, mackerel catches drop; when sardines are relatively scarce, mackerel landings often rise as the fishermen turn to that species. Similarly, when the high-priced albacore and bluefin are running, fishermen spurn the mackerel; when the tuna are scarce, they fish for mackerel.

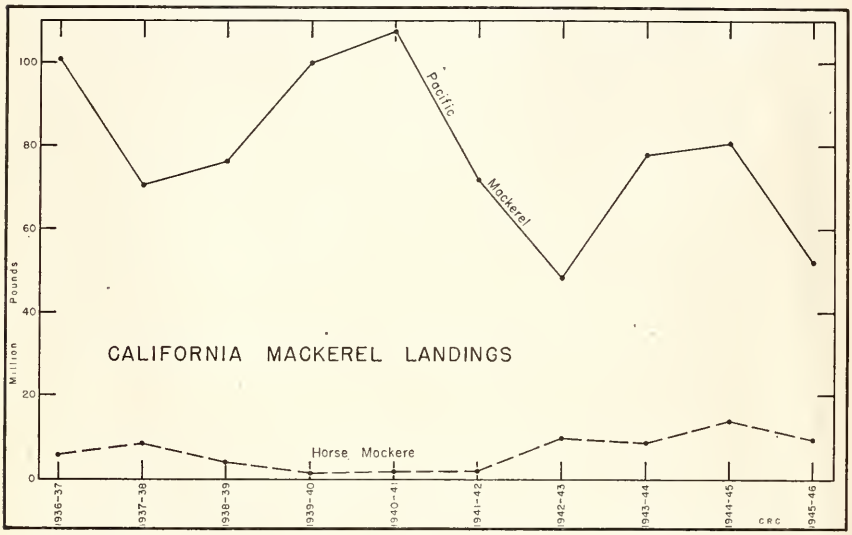


FIGURE 5. California landings of Pacific Mackerel and Horse Mackerel, by seasons, 1936-1937 to 1945-1946. Some mackerel is sold to fresh fish markets, from Monterey to San Diego, but the bulk of the landings are delivered to canneries at Los Angeles-Long Beach Harbor and Newport Harbor.

Catches of Pacific mackerel and horse mackerel for the seasons 1936-37 to 1945-46 are shown in Figure 5 (the mackerel season begins in May and runs through the following April; the canning season usually commences in August or September, and closes in February). The seasonal catches for 1944-45 and 1945-46 are shown in Table IX. The production of canned mackerel for 1944 and 1945 is presented in Table X. The canning industry is centered at Los Angeles-Long Beach Harbor, and nearby Newport Beach. Mackerel and horse mackerel are handled by the fresh fish markets at Monterey, Santa Barbara, Santa Monica, Los Angeles Harbor, Newport Beach, and San Diego. (See Tables IX and X, appendix, page 105.)

Mackerel Investigations: Mackerel investigations remained virtually suspended until the last few months of the biennium. It did prove practicable to take routine samples of the commercial catch at Los Angeles Harbor and Newport Beach throughout the period, thus assuring continuity in both length frequency records and otolith collections for age determination studies.

By the close of the biennium, the staff had expanded sufficiently to allow resumption of a more elaborate mackerel program. An analysis of results of the tagging experiments was in progress, as was work on a racial study which had been underway before the war interrupted the program.

A total of 101 tags from fish released in Monterey Bay, at various points off the Southern California coast and in Mexican waters off Lower California was recovered at Central and Southern California canneries during the 1944-45 fishing season. Of these, 91 were found in Southern California, the remaining ten at San Francisco and Monterey. There were 38 returns in Southern California during 1945-46, representing releases in the same three areas. One tag from a fish released off Southern California was recovered in Central California.

SALMON

The salmon fishery, the oldest commercial fishery in California, underwent a marked expansion during the last two years. In spite of unparalleled persecution for nearly a hundred years in the form of destruction of spawning beds by the construction of dams and by mining operations, in losses of young fish into irrigation diversions, and intensive commercial and sport fishing, the salmon is still the most important fishery in Northern California. Further dangers to the salmon lie ahead as a reckless program of dam construction has been formulated in the name of power development, flood control, and irrigation. Only continued and

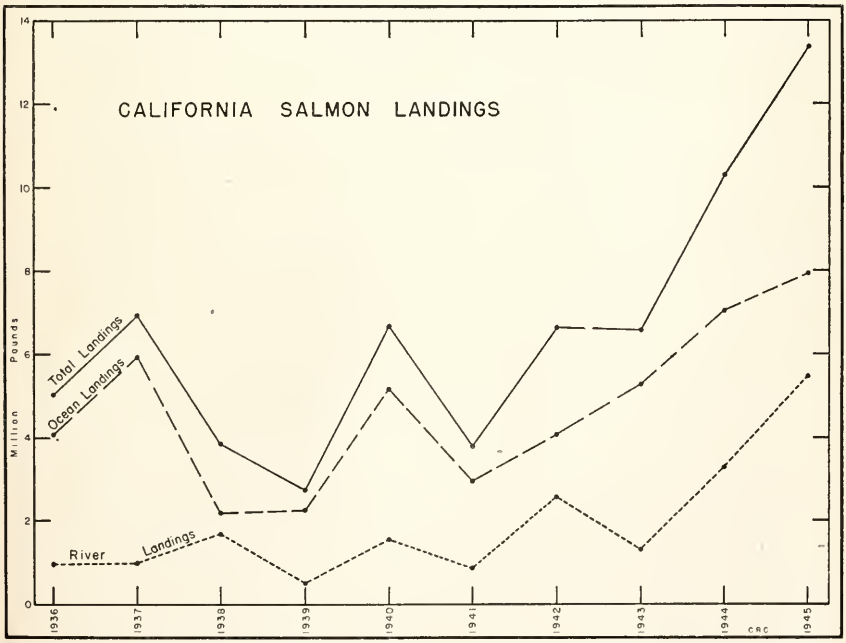


FIGURE 7. Commercial landings of salmon in California, 1936-1945. River catches, made in the lower reaches of the Sacramento-San Joaquin River, consist of king salmon exclusively. The ocean fishery, conducted from the Oregon line south to Monterey Bay, takes king salmon principally but an appreciable proportion of silver salmon is included in the catch.

coordinated activity on the part of the agencies responsible for the conservation of fisheries resources can maintain the salmon fishery at its present high level of production.

The 1944 salmon catch of 10,285,000 pounds was the greatest recorded since 1920. This production reflected a gratifying increase over the all-time low of 2,730,000 pounds landed in 1939.

The following year witnessed an even greater catch. The deliveries of 13,380,000 pounds in 1945 have not been surpassed since the Division of Fish and Game instituted its system for obtaining comprehensive catch records over thirty years ago. Record breaking catches were made in both years by ocean trollers as well as by gill net fishermen in the Sacramento-San Joaquin River area. In addition to the commercial landings, substantial catches of salmon are made by sport fishermen.

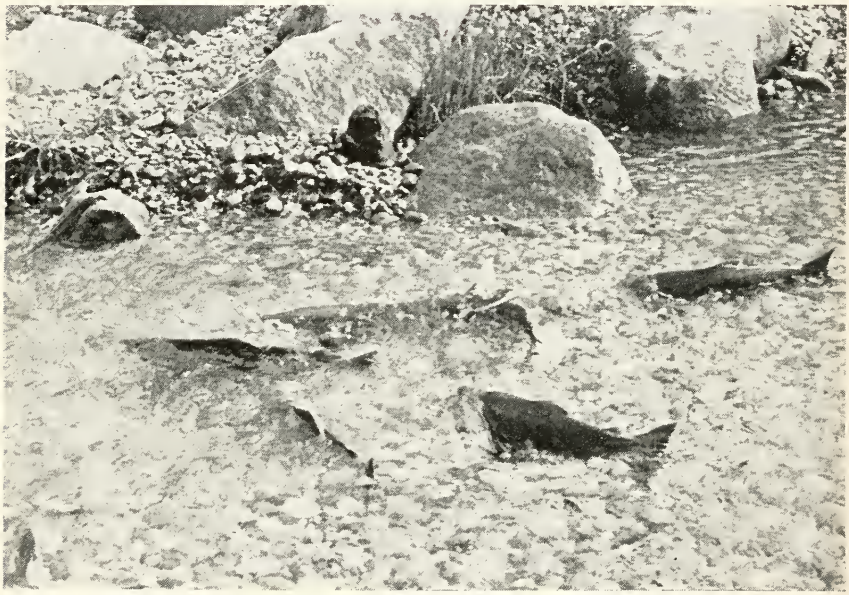


Figure 8. Salmon on a nest in the American River near Folsom.
Photograph by Donald H. Fry, Jr.

Part of the decline in the fishery from 1938 to 1941 can be attributed to a succession of dry years which adversely affected spawning and survival of young fish. The subsequent improvement is due in some measure to natural factors which resulted in successful spawning but can also be credited to the cumulative results of wise protective legislation and to improved enforcement of the conservation laws. (See Table XI, Appendix, page 106.)

CENTRAL VALLEYS SALMON STUDIES

San Joaquin River: Only the spring run was counted in the San Joaquin River. A small fall run manages to get through in years when there is water in the river in the area between Dos Palos and Gustine.

The poor run in 1944 was due to a heavy kill of fish which took place in Merced County. At this time the river was reduced to a string of nearly isolated pools for many miles below Dos Palos, resulting from a combination of factors: a light snow pack and impoundment of water to fill Friant Dam plus normal irrigation demand. Water was finally gotten down the stream, but the flow was low enough that in many places the fish had to swim through water less than two feet deep, making them easy prey for spears. Spearing was legal and as many as 200 spearers were counted at a single sand bar. Many of these people were decent sportsmen who would take their limit of two fish and go home. Others were of the type who would spear 20 or 30 fish and take home the two largest. Many people used pitch forks or other inadequate spears, and thousands of fish escaped only to die later. Even the people who were spearing were disgusted with the slaughter, but would say, "It ought to be stopped, but as long as it is legal I might as well get mine." Spearing is now prohibited throughout the entire State.

The 1945 count of 56,000 fish is a minimum figure. The river was high enough so that most of the fish jumped the Mendota Dam instead of using the fish ladder. These fish could be seen in the daytime, and their numbers estimated, but not at night. However, evidence indicates that at that point the run at night is very light.

Tuolumne River: The Tuolumne River count was made on the "big year" of the four-year cycle. The figure of 130,000 consists principally of fish counted through the fish ladder on the Modesto Dam, and includes an estimate of those that jumped the dam. The Tuolumne River salmon run almost exclusively in the fall. There is only a bare remnant of a spring run.

Mokelumne River: The Mokelumne River count was a combination of a fish ladder count and an "over the dam" count. The figure may be too low, but gives an idea of the magnitude of the run. The Mokelumne is potentially an excellent salmon stream, but the Woodbridge Dam is such a serious fish hazard that there would seem to be little hope of rebuilding the run until a satisfactory fish ladder is installed. The present fish ladder works poorly at some water conditions, and is entirely nonfunctional at others.

Detailed plans have been drawn for a new ladder. We hope to have it installed during the coming biennium.

American River: American River "counts" are actually calculations based on tag returns. The American has both a spring and a fall run; both of which are included in the above figures.

Tagging: During 1943, 1944, and 1945 the only salmon tagged were those released in the American River at Sacramento for population estimate purposes. The tags used were half-inch discs of celluloid held one on each side of the dorsal fin by a pin through the back of the fish.

Year	*No. tagged*	*No. recovered dead*	*No. seen at Folsom Dam*
1943	529	39	62
1944	1,659	86	139
1945	653	38	28

Figure 9. Tagging salmon at the Division's temporary fish trap on the American River near Sacramento. *Photograph by Richard S. Croker.*

During the period from May 11 to June 15, 1946, a total of 116 spring run fish were tagged in the vicinity of Martinez, and of these 33 were recovered. More tagging will be done in this area during the fall run. This tagging is part of a program to determine the time at which runs bound for the various rivers pass through the Delta fishing area.

Pollution—Tuolumne River: For years the industrial pollution of the Tuolumne River at the City of Modesto has been getting worse. The city does not have an industrial waste disposal system and has permitted industries to dump into the river via the storm sewers. Plans for stopping this illegal action came to nothing when the war made it impossible to obtain waste disposal machinery, and when it was essential to keep all food processing factories operating at full capacity.

The industries doing the damage are fruit and vegetable canneries, freezers, dehydraters, milk plants, and slaughter houses. The waste from these plants decomposes and removes the dissolved oxygen from the river water. Studies by the Fish and Game Pollution Detail showed that in 1943 the oxygen dropped almost to the point where the river was lethal to salmon; in 1944 the river was actually lethal. The Pollution Detail made studies in collaboration with the State Board of Health, and arranged to have extra water released into the river to dilute the polluted water to the point where salmon could survive. When the Pollution Detail was disbanded, the job was turned over to the Bureau of Marine Fisheries. This bureau then tested the river several times daily, and watched for the arrival of the salmon at the mouth of the Tuolumne. When the fish appeared in numbers, the necessary additional water was released from the Don Pedro Dam by the Turlock Irrigation District. The extra water raised the oxygen content to the point where salmon could survive, and the run went through without incident. Approximately the same thing happened in 1945 except that the pollution was worse and more water was required. A temporary reduction in the flow of extra water resulted in the death of some salmon.

Pollution—Stanislaus River: On October 7, 1944, the sewer pond of the City of Escalon broke its banks and emptied into the Stanislaus River, killing all or nearly all fish between that point and the mouth of the river. Escalon has since built an adequate disposal system which will go into operation as soon as delivery is made on a long-overdue sewer pump.

Studies of Young Salmon: Fyke-netting studies of downstream migrants have included studies of the time of migration in the Feather, American, Cosumnes, Mokelumne, and San Joaquin Rivers, and studies of the damage done by various large unscreened and inadequately screened irrigation diversions. The diversions are all taking salmon, but the ones in the Mendota area are the worst.

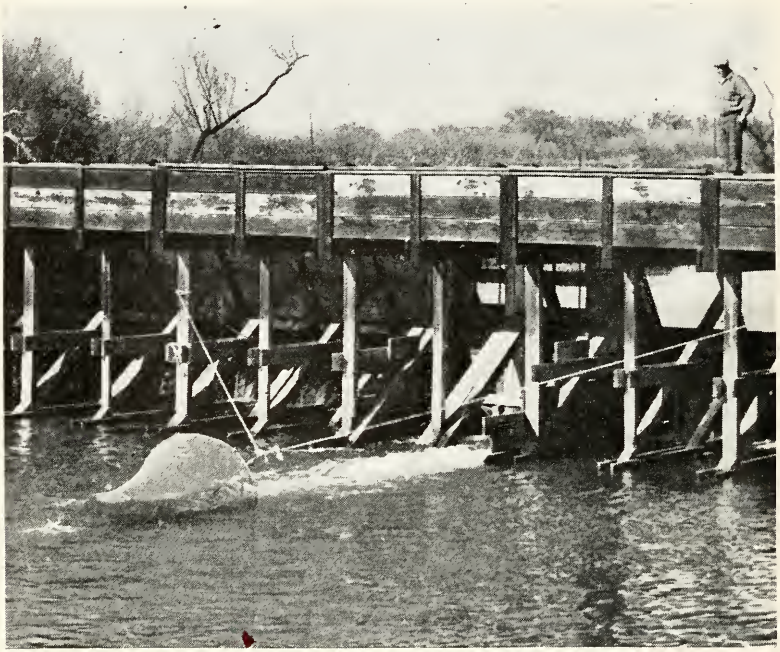


Figure 10. Fyke net being used to estimate the loss of baby salmon into a canal. The canal was taking very little water when this photograph was made and practically the entire flow was going into the fyke net. *Photograph by Donald H. Fry, Jr.*

Electric Screen Testing: Since the cost of screening irrigation canals, particularly the largest ones, by fine mesh screens (rotary drum or similar) would be almost prohibitive, the Fish and Game Commission decided to investigate the possibilities of electrical screening. Two screens were installed at Mendota and one at Dos Palos. Intensive tests carried out when small salmon were migrating in the early part of 1946 showed that the screens as purchased would not keep small salmon out of the canals, but frequent changes made by the manufacturer and the division have resulted in improved performance, and give hope that eventually such methods may prove adequate. It should be kept in mind that small fish are much harder to deflect electrically than large ones, and that fish which are actively migrating are much harder to turn than ones which are merely wandering. Thus it will be seen that screening of small salmon electrically is a very difficult problem which must be approached with caution.

Figure 11. Experimental electric fish screen now being tested near Mendota. *Photograph courtesy of Henry T. Burky*

SHARK

The shark industry which rose to such spectacular heights in 1938 and the following few years has fallen upon evil days in California. The demand for Vitamin A, principal product of the fishery, is greater than ever, but the supply of sharks is insufficient to provide the raw material. When the shark liver fishery first boomed, many fishermen turned to the new bonanza in response to the incredibly high prices offered. Serious depletion of the soupfin shark, the most important species, resulted from the heavy fishing effort. In 1945 the catch per unit of effort was but a pitiful fraction of what it had been just a few years previously; as shown by studies made by the Bureau of Marine Fisheries, and published in Fish Bulletin No. 64. However, the generous prices paid for high potency soupfin livers, and hopes of sharing in some of the exceptionally rich strikes still being made have induced many fishermen to remain in the fishery. As a result, the soupfin population is being cropped too heavily, and little hope for any future growth can be expressed.

Some shark livers taken off the California coast are processed in plants outside the State, particularly in Seattle. However, these shipments are more than compensated for by importations of outside livers to the many plants which have become established in California. Imports reached considerable proportions in 1944 and 1945 following the decline of the local soupfin fishery (see Table XII, Appendix, page 106).

The shark investigation which was instituted several years ago was continued during the biennium and culminated in the publication of Fish Bulletin No. 64. Soupfin sharks are now so scarce as to make the continuation of biological research difficult. Work has been suspended temporarily until the return of our research vessel from military service will permit a resumption of field studies.

TRAWL FISHERY

The trawl fishery of Northern and Central California experienced a tremendous expansion in 1944 and 1945. Trawling has been carried on in the San Francisco region for many years and rather recently expanded to include the waters near Eureka. Formerly paranzella nets, dragged by pairs of boats, were used exclusively but gradually the more efficient one-boat otter trawl came into use.

Various species of sole and other flatfish have always been the mainstay of the trawl fishery, as they were the fishes most readily taken by the paranzellas and earlier otter trawls. In answer to the great demand for fresh fish occasioned by military purchases during the war, a new type of trawl net was developed at Eureka in November, 1943. By early 1944 this net, the "balloon trawl" which was a modification of the otter trawl, had come into general use. The balloon trawl made possible the large scale capture of various species of bottom fishes which had previously been taken only on set lines because they were active enough to escape the ordinary trawl nets. Landings of rockfish, sablefish, and cultus soared, making possible the fulfillment of government orders as well as contributing to a greatly expanded civilian market for fresh fish. (See Table XIII, Appendix, page 106.)

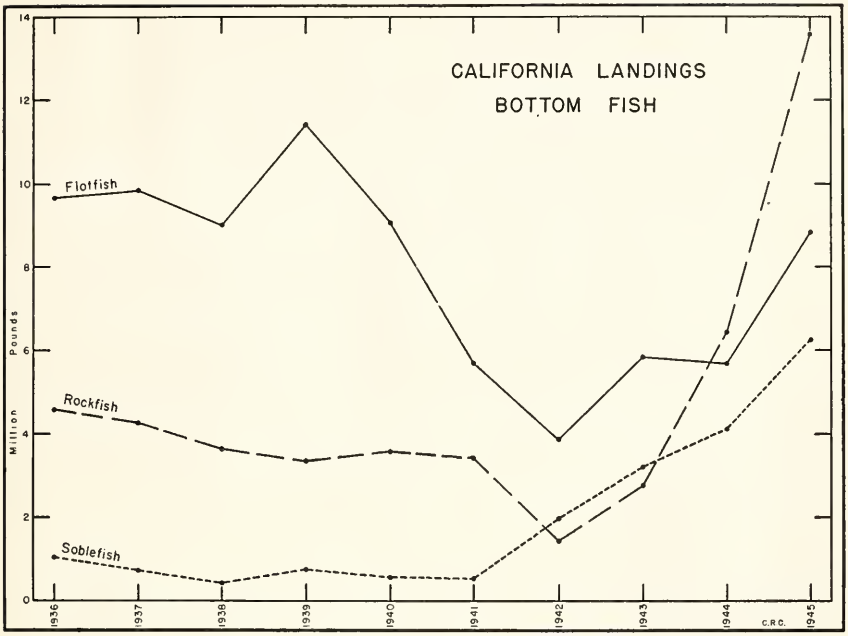


FIGURE 12. California landings of Flatfish, Rockfish and Sablefish, 1936-1945. The flatfish graph includes all species of flatfish except halibut, i.e., the various species of sole, sand dabs, starry flounder and turbot. Flatfish are taken almost entirely in trawl (drag) nets. The many species of rockfish (rock cod) were the basis of a line fishery until 1944. At the beginning of that year large scale trawling commenced. Sablefish (black cod) were taken principally on lines until 1944. During 1944 and 1945 both lines and drag nets were used.

Figure 12 illustrates the development of the trawl fishery in graphic form. It must be pointed out that the figures presented include the catches of set line boats as well as trawlers. Only small quantities of sole, sand dabs, flounders and turbot are taken commercially by line fishermen; the fishery is essentially a trawl fishery. Quantities of California halibut are taken by trawling in Southern California but the greatest catches are made by trammel netters and line fishermen. The only other flatfish of commercial importance, the northern halibut, is taken almost exclusively by set lines and trolling. These two species, exploitation of which long ago reached its limit, are excluded from this discussion.

The sole is a prime favorite of the San Francisco fresh fish trade and shares with the crab the distinction of being a San Francisco specialty.

The fishery for rockfish was almost entirely conducted by set line until 1944. Set liners still operate south of San Francisco and contributed to the 1944 and 1945 catches (approximately 1,680,000 pounds in 1945), but there was no spectacular increase in their operations.

The numerous varieties of rock cod have long been popular in California restaurants and fish markets. Much of the recent expansion in production has taken the form of frozen fillets which have proved to be of excellent quality.

The fishery for sablefish has been essentially a line fishery and a considerable proportion of the catch it still made by set liners. The line fishery at Santa Cruz and Monterey accounted for over 2,400,000 pounds of the 1945 landings, and substantial catches were made by long-line fishermen operating in the Eureka region. An undesirable effect of the expansion of the trawl fishery in Northern California is that the drag nets take large quantities of immature sablefish which will result in damage to the breeding stock. The Eureka line fishery concentrates on the large mature fish inhabiting the deeper waters. Sablefish are valuable as fresh and frozen fillets, and as a smoked product. The livers are high in vitamin potency and command a good price.

The cultus, formerly of minor importance in the line fishery, has also shared in the expansion of the trawling industry, but not to the extent of the rockfish and sablefish.

Investigation of the Trawl Fishery: The trawl investigations, which were commenced when the sole and sand dab fisheries first showed signs of overfishing, suffered a temporary setback when personnel losses following the outbreak of the war curtailed our activities. However, information was collected on fishing methods and intensity and some biological data was collected. At the close of the biennium it was possible to assign adequate personnel to the problem. Our bottom fish resources are far from inexhaustible and it is necessary to formulate a sound conservation policy in order to perpetuate them.

OTHER INVESTIGATIONS

Abalones: The abalone fishery has continued at the maximum level of production. Increased numbers of divers, many of them returning veterans with naval diving experience, have entered the industry. The fishery remains centered along the San Luis Obispo County coast.

Changes in diving methods and areas and in the abundance of abalones have been followed by the Bureau. Recommendations for improved regulatory measures have been formulated.

Oysters: The oyster industry has been at low ebb since the importation of Japanese seed oysters came to an abrupt end in 1941. Only limited production has been possible. Resumption of shipments, which is expected in early 1947, will find both the growers and the Bureau of Marine Fisheries ready for the rebirth of the industry.

Pismo Clam: The Pismo clam, choicest delicacy of Central and Southern California beaches, has become so scarce throughout the State that commercial and amateur diggers alike now have difficulty in obtaining worthwhile quantities. The local commercial take in 1945 was only 26,000 pounds. Nothing short of the most severe regulation can bring the Pismo clam back to even a semblance of its former great abundance.

During the war, when canned foods were in heavy demand, Southern California canners imported Pismo clams from Mexico. The clam is abundant along the beaches of Lower California and a heavy production was possible. Shipments of shucked Pismo clams amounted to approximately 1,470,000 pounds in 1944 and increased to 6,680,000 pounds in 1945. The latter figure represents a harvest of over 53,000,000 pounds in live weight.

Pismo clam investigations were suspended during the war. However, one of our staff members was able to make a few observations on Mexican beaches while on vacation.

Sea Lions: In response to an intensification of the usual complaints of sea lion depredations on fishing gear and fishery resources, the Bureau of Marine Fisheries in cooperation with the Bureau of Patrol made a survey of the numbers of sea lions present along the entire California coast in June, 1946. The assistance of the United States Navy in placing dirigibles and crews at our disposal is gratefully acknowledge.

The survey revealed that sea lions have indeed increased substantially in numbers since the last previous complete count, which was made in 1938. The 1946 survey listed 12,506 sea lions, an increase of 4,645. Of these, 7,338 were observed south of Point Conception. It is in Southern California that the greatest increase has taken place.

Realizing that the increase in numbers of sea lions constituted a menace to the fishing industry, the Bureau recommended that a reduction in the herds was desirable.

Undersea Oil Exploration: The ever-increasing demand for petroleum products has led the oil industry to seek new deposits far from shore beneath the ocean bottom. Exploration methods involve the detonation of explosive charges under the surface of the water, with echoes of oil-bearing strata being picked up on sonic detection devices. Inasmuch as the use of explosives can cause damage to marine life, any undersea exploration is subject to regulation by the Fish and Game Commission.

Supervision of the exploratory work insofar as it may affect the fisheries resources is the responsibility of the Bureau of Marine Fisheries. Not only have the operations been closely observed and supervised, but independent studies have been conducted to determine the effect of explosives on fish, mollusks, and crustaceans. These studies, which are the subject of a forthcoming publication, indicate that the use of explosives as conducted in oil surveys is only moderately harmful to marine life, and only within a restricted range. If the "shots" are buried under the sand, harmful effects are minimized, it was noted. As a result of these observations, the oil companies are required to operate only where fish are not abundant at the time, and furthermore they must bury their charges in the sand when operating in shallow water.

Ocean Sportfishing: Deep sea sport fishing was greatly curtailed during the war, largely because of stringent security measures and to some extent because party boat operators and crews entered the armed forces or were engaged in commercial fishing. Activity increased in 1945 as security restrictions were lifted. By the spring of 1946 the sport fishery from San Francisco to San Diego was operating on a prewar scale. In fact, many new boats were built and newcomers to the business were eagerly reaping the golden harvest of postwar easy money.

The bureau's survey of sport fishing boat catches was suspended until early 1946 when an increase in research personnel had made resumption possible.

The interests of commercial fishermen and anglers overlap, as both groups fish in the same waters and for the same species of fish. Both commercial and sport fisheries have expanded at a sensational rate, the

former since about 1915, the latter since about 1925. During the past 15 years there has been an unfortunate but increasing feeling of bitterness between the two groups with many in either faction refusing to see the merit or necessity of the other.

The Bureau of Marine Fisheries believes that this schism is neither desirable nor necessary, but that in fact the entire fishery is one and the same and there is room for all. In the commercial fisheries thousands of persons make their living in providing necessary food and other marine products for all the people. In the sport fishery hundreds of persons make their living as boat operators, and hundreds of thousands of people obtain the recreation which is so vital in these days when the pace of living literally kills.

Hence it is with a sense of gratification that we can report that in 1946 members of the so-called conflicting interests were brought together and were able to compromise many of their differences. Under the guidance of their present capable leaders, the organized sportsmen and the commercial fishing industry should enjoy more harmonious relations, to the benefit of the entire fishery.

Fisheries Statistics: Good catch records are the basis of all fisheries research and are a necessary part of any management program. California was a pioneer in establishing a comprehensive system for the collection and analysis of fisheries statistics. During the past few years every effort has been made to keep the system functioning in spite of the loss of clerical and field personnel. Although it was necessary to drop certain special reports, the basic material was collected and future analyses will be possible as we are able to obtain personnel. The commercial catch records suffered somewhat from a curtailment of field supervision but the loss of basic material is negligible; the ocean sport catch survey suffered somewhat more.

Experience has shown that fisheries statistics do not compile themselves automatically. Constant pressure must be brought to bear on the dealers who are required to make the original reports and who often prefer to neglect them. Only experienced clerical personnel can build the raw records into finished reports, and such help has been heartbreakingly scarce. In spite of difficulties, the biennium ended with our catch reports in good shape; the research and administrative staffs can refer to them with confidence.

REPORT OF THE BUREAU OF FISH CONSERVATION

The Bureau of Fish Conservation is charged with the problem of making investigations and performing activities which will further the conservation and propagation of fresh water fish of the State. Toward this end the Fish Conservation Bureau has compiled data which has been used as a guide in formulating regulations on bag limits and seasons for taking fish. Fish hatcheries have been operated and various species were planted in many of our inland waters.

A research staff was employed to obtain information used for the development of policies of operation, and to serve as a basis for conservation and propagation procedures. The results of this research make it possible to base all activities of the bureau on sound biological investigations and reports. The research staff has conducted surveys of streams and lakes, supervised the planting and rescuing of fish, compiled creel counts from catch records of fish taken by sportsmen and various other special investigations. Studies were continued on the effects of dams in waterways. Fish screens were maintained. Other studies included investigations regarding the "farm pond" program and also the results of fishing in tributaries of the Sacramento River as a consequence of the impounding of water at the Shasta Reservoir.

CHANGES IN TROUT SEASON

The end of the war in 1945, and the lifting of gasoline restrictions contributed to a tremendous increase in the purchase of fishing licenses. The demands for travel and recreation boosted the sale of licenses to approximately 500,000 for the year. This total exceeded the average license sales of 442,000 for the preceding four years by approximately 100,000. The greater proportion of the license sales in 1945 occurred in the few months following the termination of hostilities.

Wartime increase in population was a major factor in the increase of license sales but it is noteworthy that the percentage of total population buying angling licenses has also grown in recent years as shown by the following tabulation:

POPULATION AND ANGLING LICENSE SALES

Year	*Population*	*Angling licenses*	*Percentage of population buying licenses*
1930	5,677,251	248,319	4.3
1940	6,907,387	388,472	5.6
1945	9,250,000*	554,025	5.9

* Estimated.

The year 1943 was the last in which it was possible to carry on an annual creel census by sending postal card questionnaires to a random sample of licensed anglers.

The number of licensed anglers remained relatively constant during the war years and the reported average catch of trout by successful anglers was 66 in 1941, 70 in 1942 and 75 in 1943. The estimated total

catch of trout by all anglers was between 15 and 16 million as compared to an estimated catch of between 12 and 13 million prior to the war. Although the total production of hatchery reared trout was increased from 133,948 pounds in 1940 to 351,461 pounds in 1945 the increase was not equal to the increased drain upon the trout supply.

It was evident from the rapid increase in angling license sales during the fall months of 1945 that the number of anglers in the field during 1946 might be as great as 700,000 and this has been verified by the preliminary figures as to license sales in 1946.

With these facts in mind the bureau recommended to the commission at the first regulatory meeting in January, 1946, that the bag limit on trout be reduced to 15 fish or 10 pounds and one fish. This recommendation was supported by most of the sportsmen's organizations throughout the State except for its application to the bag limits for north coast steelhead streams.

The commission authorized the regulation, making it state-wide, and it became effective with the opening of the trout season May 1, 1946.

FISH HATCHERIES AND FISH PLANTING

The following hatcheries were operated during the period covered by this report:

Hatchery	*County*
Basin Creek	Tuolumne
Brookdale	Santa Cruz
Burney	Shasta
Coy Flat (seasonal)	Tulare
Fall Creek	Siskiyou
Feather River	Plumas
Fillmore	Ventura
Hot Creek	Mono
Huntington Lake (seasonal)	Fresno
Kaweah	Tulare
Kern River	Kern
Kings River	Fresno
Lake Almanor	Plumas
Mt. Shasta	Siskiyou
Mt. Whitney and Black Rock ponds	Inyo
Mt. Tallac	El Dorado
Prairie Creek	Humboldt
Sequoia	Tulare
Tahoe	Placer
Yosemite	Mariposa
Yuba River	Sierra
Central Valleys (warm water fishes)	Sacramento

Operation of the Alpine and Madera seasonal hatcheries located in the counties of the same name was discontinued early in the war and they continued inoperative during the biennium in order to conserve manpower and because they were the least essential.

A few temporary ponds using well water were put into operation at the San Gabriel site near Whittier, Los Angeles County, in 1944. They were operated on an experimental basis to determine if the site was suitable for a permanent installation. It was found that with aeration the water was satisfactory and, the temperature being approximately 60 degrees, the growth of the fish was rapid.

Two experiemental ponds set up at Owens Park, Stanislaus County, were abandoned after two months of operation as the supply of water was inadequate and too high in temperature.

The following ponds were operated in cooperation with sportsmen groups:

Murphys pond, Murphys, Calaveras County, operated on an experimental basis in 1945, June to November, with fair success and again in 1946.

Feather River ponds, Belden, Plumas County.

Truckee River ponds, Truckee, Placer County, operated in 1945 and 1946.

South Fork American River, Kyburz, El Dorado County.

Hatchery and residential buildings suffered continued depreciation during the war years when materials and labor were unavailable for normal upkeep and this condition continued through the biennium. Plans have been made for extensive repair and remodeling as soon as possible.

Increased production and the rearing of larger fish has created problems in the distribution of the fish. The only new automotive equipment available since 1941 were three Navy tank trucks designed for hauling petroleum products. One of these has been remodeled and it can transport in excess of 1200 pounds of trout in the 1300-gallon tank. Aeration is dual, utilizing both the spray and air injection methods.

Preliminary experiments in the planting of fish in high mountain lakes by plane indicates that fish of small size can be poured safely in the water containing them so long as the height from which they are released is more than 300 feet. Larger fish are injured unless dropped by parachuted containers.

RESEARCH

The biological staff, reduced to four by the war at the beginning of the biennium, began to increase in size with the return of men from military service, and by June 30, 1946, numbered 15. Of the 11 additions, six were former full-time or part-time employees, two were new men, and three were seasonal employees. Operations, severely limited during 1944 and 1945, expanded during the first half of 1946. A list of publications and reports is given at the end of this section; their titles are sufficiently self-explanatory to give an idea of some of the activities. Further description follows.

Stream and lake surveys still remain the axis around which the fish conservation work revolves. Certain long-range programs are under way, including cooperative surveys with the Fresno County Sportsmen's Club, the third and fourth of which took place during the biennium; the Mt. Eddy Lake unit survey in Siskiyou County; and an intensive study of waters in Mono and Inyo Counties. In addition, surveys are carried on by all members in connection with other duties whenever opportunity offers. They provide important information used by the biologists in making recommendations for stocking, for stream and lake closures, for stream and lake improvements, and for regulatory or legislative proposals.

RECORDS OF FISH PLANTING AND RESCUE

Along with the surveys, the biological staff is charged with seeing that the stocking and fish rescue records are kept up to date, both in detail and in summary, and from this has evolved, in cooperation with the hatchery staffs, a new instrument called the "Hatchery Management Binder." This is a loose-leaf but permanent record, a collection of information on past stocking, stocking policy, and basic survey data, to be kept at each hatchery, with duplicates in the district biologist's office and in San Francisco. An outstanding advantage is that it makes available to a new man coming into a hatchery, all existing knowledge with regard to the waters under his jurisdiction. Preparation of such a binder requires a great amount of detailed field and office work on the part of both hatcherymen and biologists, and so far only six hatcheries have been so equipped, but the others will be similarly equipped as time permits.

CREEL COUNTS AND CATCH RECORDS

Creel counts and catch records continue to be one of the most important phases of our fisheries investigations. The general angling catch records, based on a return postcard questionnaire sent to a one-in-ten sample of the angling licensees, was limited in 1944 and 1945 by shortage of help. The counties of heavy striped bass catch, however, were sampled in order to maintain an unbroken record for this important fishery. In addition, creel counts were carried out by members of the staff, some as annual spot checks on important waters, some as intensive long-range projects. Outstanding among the latter is the Castle Lake program, the first phase of which, just ended, yielded valuable information on survival of various species of trout stocked at various sizes in a typical mountain lake. The results, including figures bearing on the cost to the commission of each trout caught by the angler for various species stocked at various sizes, were published on July 1, 1946 in *California Fish and Game,* Volume 32, No. 3.

EFFECT OF DAMS

Much attention has been given to the effects of new dams upon fish life. Studies have been made, including in most cases recommendations for maintenance of fish and fishing; of plans of the U. S. Bureau of Reclamation, the U. S. Engineers, and several power companies for construction of dams or flood control devices and for alteration of dams or operating methods on the following streams: Santa Maria, Santa Ynez, Salinas, San Lorenzo, Russian, Eel, Klamath, Pit, Truckee, South Fork American, South Fork San Joaquin Rivers, and Putah and Cache Creeks in the Yolo-Solano project. All applications to the State Division of Water Resources for permits to appropriate water have been examined since the beginning of 1945, and protests entered where the amount to be diverted threatened to reduce the stream flow below the safety limit for fish.

Many of these appropriations are of a comparatively minor nature, but in the aggregate they bring about a serious reduction in the total amount of water which can support game fish. However, it is realized

that there is nothing to be gained by demanding unreasonable releases of water for fish protection, and of the 515 applications reviewed up to June 30, 1946, only 27 have been protested. Of these protests, 14 have been taken care of by including in the permit, provisions regarding maintenance of stream flow; by agreement between the applicant and the commission; by withdrawal of the application; and by withdrawal of our protest. Eight protests still were pending at the end of the period. In all cases where the U. S. Fish and Wildlife Service and the U. S. Forest Service were interested, cooperative contacts have been maintained with these agencies.

FISH SCREENS

The maintenance of fish screens came under the jurisdiction of this bureau on October 15, 1945, and operations of the fish screen crew in the northern part of the State have since been under supervision of our district biologist in that area. The installation of $\frac{1}{8}$-inch by 3-inch mesh, smaller than the mesh of most of our present screens, is being pushed, since it is more efficient in preventing the loss of small fish and at the same time clogs less easily than the larger mesh.

FARM PONDS

The number of small reservoirs constructed by ranch owners for stock watering and irrigation purposes has greatly increased, and a "farm pond" program is under way. This project includes not only the furnishing of bass, sunfish and other warm-water species as initial seed stock, but experiments at our Central Valleys Hatchery at Elk Grove as to proper numbers and combinations of species for such waters, and on weed control and fertilization.

SHASTA RESERVOIR

The proper fish management of the newly constructed Shasta Reservoir has been under study. A further problem in this connection has arisen from the fact that "hardheads" (*Mylaphorodon conocephalus*, sometimes miscalled "pike") and other rough fish have migrated out of this large body of water up its tributaries, especially the Sacramento River, in such numbers as to endanger the heretofore excellent trout fishing in these streams. Investigation indicates that the hardhead goes upstream in the spring and descends again in the fall, and plans are underway for the construction of a low dam on the Sacramento River which will block future upstream incursions of these fish once the fall migration has taken them downstream below it. It will include a trap where trout on their upstream spawning migration can be segregated from the rough fish and allowed to ascend, while the latter will be destroyed.

MISCELLANEOUS PROJECTS

Other long-range projects which have been continued or revived during the biennium are: The Lake Almanor study; the Clear Lake investigation, to which one biologist is now devoting a large part of his time; diseases in the trout hatcheries; pollution control, under one of our former pollution specialists returned from naval service; the Waddell Creek

steelhead life history study, now in final stages of preparation for publication; and the striped bass investigation. To the latter, two men have devoted almost their entire time since early in 1946, and marked progress has been made in assessing the catch, in delimiting spawning seasons and localities, and in evaluating the incidental effect on striped bass of the river net fishery for salmon.

Finally, a much needed check list and bibliography of California fresh-water fishes is in preparation, and a manual for the use of the biological staff. Sections relating to plankton collections and analysis, and the study of food contents of fish stomachs, already have been completed.

The publications by the members of the research staff and a list of the special administrative reports prepared by the personnel of the Bureau of Fish Conservation during the biennium will be found in the appendix, page 63.

It is planned that both the hatchery and research programs will be expanded in the future to a point well above prewar level. This objective will enable us to accomplish a more complete program of operation and to expand the research activities to include investigations on many problems which must be solved for the most efficient conservation of fish of our inland waters.

REPORT OF THE BUREAU OF ENGINEERING

During the biennium, activities of the bureau were greatly restricted due to the war and the restrictions immediately following the end of hostilities. The bureau was particularly under-staffed in the field which only permitted a minimum of maintenance work on the many fish screens installed previous to the war. Lack of materials and the difficulties of obtaining such material as was available further slowed this important work. New installations were entirely out of the question and were not attempted.

Because private individuals and companies as well as public agencies were experiencing the same difficulties, maintenance and repairs to fishways on privately owned and operated dams were only demanded in essential instances. Fortunately, it may be stated that the important runs of fish were not handicapped by lack of properly conditioned fishways as only in a few instances was the bureau unable to take necessary remedial steps. The general condition of field structures was continually observed, however, and records were kept of needed improvements and new installations for the time when construction work would be feasible.

The staff of the bureau was able to complete a considerable number of field surveys for other bureaus of the division and to complete the desired plans for these projects.

For the Bureau of Fish Conservation, the Crystal Lake Fish Hatchery on Crystal Lake and Hot Creek in Shasta County were important projects. Complete topographic surveys and other studies were made from which a preliminary plan of the proposed development was prepared in accordance with the desires of that bureau. Topographic surveys were made of other fish hatchery sites as requested and studies and water measurements were made at existing fish hatcheries.

Two topographic and property surveys were made for the Bureau of Game Farms, one upon property acquired by that bureau at Chico, and the other at the Game Farm at Redding. Plans also were prepared for a residence at the latter place.

Early in the biennium the bureau was able to start a two-man survey party at the Fleming Ranch on Honey Lake in Lassen County. This property was acquired by the Bureau of Game Conservation pursuant to the provisions of the federal aid Pittman-Robertson Act and which that bureau proposed to develop under federal aid for a portion of their Honey Lake Waterfowl Management Area. At a considerable disadvantage through lack of personnel, sufficient field data was obtained so that a preliminary layout was prepared of the full development of this 2,100-acre site in accordance with the desires of the Bureau of Game Conservation. So that construction could start under contract at an early date, designs of all structures were made in order that full advantage could be taken of nonpriority construction.

Surveys were also started on other units of the Honey Lake Waterfowl Development but had to be discontinued due to shortage of personnel. As previously stated, construction work was difficult and usually subject to government priorities. Earth moving and grading, however,

were exempt from such restrictions and the bureau was therefore able to relocate, under contract, the access road into the Cedar Creek Fish Hatchery site in Mendocino County.

There is an important need for adequate fish screens and fishways throughout the State and now that war conditions are slowly being eliminated it is hoped that definite progress will be made on these important installations as well as the other engineering needs of the division throughout the next biennium.

By action of the Fish and Game Commission on August 24-25, 1945, the Bureau of Engineering was discontinued and the activities normally carried on by that bureau were transferred to the Department of Public Works, Division of Architecture, and to the various bureaus within the Division of Fish and Game.

REPORT OF THE BUREAU OF GAME CONSERVATION

During the past two years the Bureau of Game Conservation has been concerned with the many problems that continually arise in conservation work. With some we have gained in knowledge and experience; with others, we have not yet arrived at the answer.

Data has been compiled which was used as a guide in formulating regulations and bag limits for taking game. A staff of trappers was maintained to take predatory animals.

A research staff was employed to obtain information for use in the development of policies of operation, as well as to serve as a basis for conservation procedures. The results of this research make it possible to predicate all activities of this bureau on sound biological investigations and reports.

Many of these findings are put into immediate application by a staff of game management personnel, while other projects require several seasons for conclusion.

Studies have been made of crop damage by wildlife and the alleviation of some of the depredations was attempted. Increasing difficulties of the sportsman to find a place to hunt has been a major consideration during the biennium.

Pittman-Robertson projects, financed three-fourths by the Federal Government and one-fourth by California, included various surveys and investigations, development projects and land acquisition. Several programs of upland game bird conservation have yielded promising results. The transportation of beaver into new or depleted areas is giving these animals a chance to recover some of the habitats in which they once abounded.

Investigations on the health of the wildlife of the State were continued by the disease laboratory staff.

ANTELOPE SEASON

Antelope hunts were continued during the month of September in 1944 and 1945, along the same lines as previous hunts, with 500 permits, selected by lottery, being issued to hunters. In 1944, a total of 322 antelope was taken, and in 1945, a total of 307. An air survey of the antelope area in the winter of 1945 revealed a lesser number in the herd and a much reduced number of bucks, and, as a result of these findings, no open season was recommended for 1946.

PREDATOR CONTROL

During the biennium a grand total of 13,224 coyotes and 5,082 bobcats were taken by our predatory animal hunters and trappers. Trappers were greatly curtailed in their work by wartime restrictions on the use of automobiles. A summary of the predators taken during the biennium will be found in the appendix, page 136.

CROP DAMAGE

Game damage to crops and land has been a constant problem. In the rice fields, losses have been greatly reduced by herding ducks and geese with airplanes and by using bombs, flood lights, scare crows and strings of firecrackers on a slow-burning fuse that ignites the crackers at definite intervals throughout the time the birds may have been working in the field.

The acquisition of lands and better control of grazing seem to be the best answer to the deer problem in areas where deer are damaging orchards, gardens, crops and grain fields, some ground has been gained by herding, and by the use of repellent sprays. The ultimate answer in certain areas seems to be a thinning of the herds by trapping or other means. Trapping is feasible where deer congregate in considerable numbers in a limited area, but trapping will be slower and much more costly where they are scattered over a large area.

AVAILABLE HUNTING AREAS

By far the most serious problem confronting the sportsmen of California is one that can be resolved only by the sportsmen themselves. It is a problem worthy of full-time attention of all the sportsmen's organizations in the State. The problem, briefly defined, is the promotion of better relations with landowners in order that the responsible hunter may have access to additional land on which to hunt.

More and more acreage is being closed, chiefly because of the actions of psuedo-sportsmen. There is a considerable percentage of meat hunters who have no regard for the rights of property owners and who have conducted themselves in a manner which has prejudiced landowners toward all hunters, including true sportsmen.

California has an area (in round numbers) of 100,000,000 acres. Only a small percentage of this area is highly developed agricultural land. There is no valid reason why the greater portion of the balance should not be open to sportsmen, if the owners could be assured hunters would observe the code advocated by all sportsman's organizations, to an end that deliberate acts of vandalism would be eliminated.

Through the action of psuedo-sportsmen, stock has been wantonly killed and crippled, gates left open, domestic fowl slaughtered, fences broken down, crops destroyed and property burned. There also has been much illegal hunting which landowners, generally, do not approve.

The closing of national forests became necessary because those in charge felt that hunters, generally, cannot be trusted. The restrictive action was a direct outgrowth of destructive acts by a very small percentage of the hunters who previously enjoyed the forests.

Better control of meat hunters, and hooligans with guns, by sportsmen's organizations can bring about better hunting on lands now closed to the public.

PUBLIC SHOOTING GROUNDS

The matter of public shooting grounds was vigorously advocated early in 1944, and the Bureau of Game Conservation was instructed to investigate and appraise suitable lands.

The United States Fish and Wildlife Service agreed to cooperate with the State in land examination and appraisal. This agreement has been fulfilled in every respect.

There was general concord by all parties that 3,500 acres was the smallest unit which could be economically administered and that 5,000 was a desirable minimum.

Lands of marginal or submarginal agricultural quality only, can be considered for public shooting grounds, first because of purchase cost, and second, to avoid a reduction in agricultural production. The latter was an especially potent reason in wartime.

The necessity for an adequate and cheap water supply limits still further a choice of sites. Agricultural markets expanded by war prices have put into cultivation considerable acreage which normally would have been available for acquisition and has inflated values on practically all land far beyond its actual productive capacity.

Because all purchase money was to be furnished by the State, the Department of Finance ruled that appraisal by the United States Fish and Wildlife Service could not be accepted unless supported by a comparable appraisal from an acceptable independent source. This decision was a concession on the part of the Department of Finance, since that organization commonly required three appraisals.

The following is a list of tracts which have been examined and of findings and action taken in each case. The projects are listed in the order of their inception:

1. Yolo By-Pass, Yolo County, 74,000 acres. This area was reported favorably but the key land holders refused to consider selling. This area is one of the most adaptable sites examined but because of the attitude of the owners is unavailable.

2. Merced County Tract, 5,500 acres. This tract embraces the southern portion of the Crane Ranch and miscellaneous adjoining properties. The report on this land was generally favorable, although its water supply is inadequate pending allocation of Central Valley waters. The Crane Ranch was appraised by the United States Fish and Wildlife Service, and the additional lands by Merced Realty Board. Negotiations were terminated when the Crane interests executed a long time lease at a figure which implied a value for in excess of the appraisal.

3. Hay Ranch, Madera County, originally 3,200 acres; finally 7,000 acres. This tract was offered by the owner at $40 per acre with the provision that he retain grazing rights for a period of 20 years from date of sale. The offer was declined by the Fish and Game Commission because of the grazing stipulation.

4. Chico Sportsmen's tract, Glenn County, 5,700 acres. Located in the southeast corner of Glenn County along the west side of Butte Creek. This tract was appraised by members of the Chico Realty Board and was favorably reported upon by the Bureau of Game Conservation. It is not of record that a definite rejection of this tract has been made.

5. Moffat tract, Madera County, 5,000 acres. This tract abuts on Lone Willow Slough just north of Number 3 above. It is without water right and would be dependent on floodwater runoff, supplemented by pumping. Development and maintenance cost would be high. It was rejected for these reasons.

6. Imperial Valley Tract, Imperial County, 3,720 acres. Following a joint examination of the entire "Salton Sea Reserve" by representatives of the Fish and Wildlife Service and the Division of Fish and Game, areas were selected by each which were deemed suitable for their respective purposes and mutually satisfactory as to location. (Salton Sea Reserve is all the land of the Imperial Irrigation District located below the minus 230 foot contour and is reserved by the District for the disposal of waste and drainage waters and the silt carried in these waters. This land cannot be purchased and is available by lease only. The State is leasing two separate tracts, one of 2,640 acres, the other, 1,080 acres. Both are being developed as experimental areas on which management practices in the handling of both waterfowl and hunters are being tested. The restrictions imposed by State regulations on contract work and the prevailing labor shortage has severely impeded progress.

7. Sutter By-Pass, Sutter County, 9,988 acres. The tract was appraised by the United States Fish and Wildlife Service. The values affixed were generally so high that the tract was rejected in spite of its good location and its adequate water supply.

8. Colusa County, 8,500 acres. In cooperation with United States Fish and Wildlife, an attempt was made to locate suitable land adjoining the federal feeding area at Colusa. Failing in this effort, the investigators arranged for an appraisal of the Welch Tract, located in Colusa Trough east of Maxwell. More than a year was required to obtain the second appraisal required by the Department of Finance. The commission then decided to postpone acquisition pending a reduction of land prices and an evaluation of experience obtained on experimental areas.

9. Jameson Tract, Fresno County, 4,100 acres. This tract is located on Fresno Slough 24 miles west of the City of Fresno. It has been partly developed as a commercial shooting area. Water must be purchased from the Central Valleys Project and pumped from Fresno Slough. The commission rejected the tract because of its high price.

Summary: Nine tracts totaling nearly 57,000 acres have been examined. A considerable portion of the land was found suitable for the proposed use. Prices of these lands, however, were found to be uniformly high, in nearly all cases being at least double the value of the land, based upon its productive capacity under normal economic conditions. Only one of the nine locations in Imperial County, has actually been obtained. This area is under annual lease and being developed experimentally.

Other Public Shooting Areas: 1. Sherman Island, Sacramento County, 3,100 acres. Control of this area was obtained by transfer from the State Reclamation Board. The primary purpose in obtaining this area was to prevent its being leased to private parties.

2. Imperial Waterfowl Refuge, Imperial County, 2,500 acres. In order to disperse concentrations of waterfowl occuping this refuge, which are alleged to damage agricultural crops, this refuge has been opened to the public for the last two shooting seasons. Dispersal has been eminently satisfactory but hunter success was low on the refuge area.

3. Honey Lake, Lassen County. There are three units in this project, all acquired under the Federal Aid in Wildlife Restoration (Pittman-Robertson) Act, for development as waterfowl management areas. Under

terms of this act, 50 percent of all lands so acquired must remain inviolate sanctuaries. Only one unit has been opened to shooting. Of the 2,092 acres of Unit No. 1 (Fleming Ranch) 1,000 acres are open for public shooting. Due to the small size of this area it will probably be necessary in the future to limit the number of shooters. When the other units of this project are developed an area equal to half the total acreage will be available for public shooting.

4. Tule Lake Reservoir and Madeline Plains, Lassen County. This is another Pittman-Robertson project and subject to the same restrictions as Honey Lake. When completed this project will provide 2,500 acres for public shooting.

PITTMAN-ROBERTSON

During the biennium the Pittman-Robertson program has continued to operate on a reduced scale. Although a tremendous unappropriated reserve—approximately $12,000,000—has accumulated since the act became law, the war-time shortage of manpower, equipment, and materials has made any increase in annual appropriations impractical. Although California, in common with most of the other states, specifically requested that there be no increase in available Pittman-Robertson funds during the war period, we have been making plans for the expenditure of the greatly increased appropriations that undoubtedly will be made by Congress during the next few years.

On July 1, 1944, California received an apportionment of $34,493.03 and on July 1, 1945, $39,413.47. Adding California's contribution of one-third brings the total available for expenditure during the biennium to $98,542.00.

A total of 13 projects was in operation during all or part of the biennium. Of these, eight were in the category of surveys and investigations, two were development projects, and three involved the acquisition of lands. Following is an account of the various projects which have been undertaken:

Surveys and Investigations: Two five-year research projects were completed on June 30, 1945, and final reports are at present being prepared. One of these, Project 5-R, was a study of California's fur resources, and the other, Project 6-R, was a study of problems involved in the management of valley quail, particularly in the south coast counties.

Project 15-R, a study of the effect of seasonal and other factors on the palatability of deer and antelope meat was begun early in 1944 and field work was completed in the fall of 1945. A final report now is being prepared by the University of California, the cooperating agency. The results of this study may well have an important effect on future decisions relative to deer seasons.

Project 16-R, begun in 1944 and completed June 30, 1946, involved the investigation of water development possibilities for wild life use in the southeastern deserts and sufficient data has been obtained to justify an extensive program just as soon as funds, labor, and material are again available.

Four other investigational projects were begun during the latter part of the biennium. These are Project 19-R, a study of the life history and habits of mountain quail; Project 20-R, a survey of waterfowl food

plants being conducted in cooperation with the University of California; Project 22-R, an investigation of pheasant management problems; and Project 24-R, a survey of the critical summer and winter ranges for deer within the State.

Development Projects: Project 14-D, providing for the construction of approximately five miles of drift fence on the western boundary of the Tehama winter range was completed early in 1944 and has since provided that critical deer range with much-needed protection from livestock trespass.

Project 18-D, the live-trapping and transplanting of beaver, commenced in May, 1945, was still in operation at the close of this biennium. To date, approximately 170 beaver have been transplanted at 44 locations.

Land Acquisition: In spite of soaring land prices that have doomed extensive acquisition projects to almost certain failure, it was possible to complete certain phases of two existing projects and to obtain preliminary approval of projects that will be carried through to completion just as soon as conditions return to something approximating normal.

Under Project 10-L, the Tehama Winter Deer Range, three additional parcels totaling 3,500 acres were added to 25,000 acres already under State control.

In Madeline Plains, Lassen County, under Project 17-L, approximately 4,500 acres, including the Tule Lake Reservoir, were acquired for waterfowl management purposes. Half of this area will be available for public shooting.

As this biennium came to a close, preliminary approval had been obtained for the acquisition of 131,000 acres in the critical Doyle Winter Range area in southeastern Lassen County, and 640 acres of deer range in the vicinity of Bald Mountain, Shasta County.

THE UPLAND GAME BIRD PROGRAM

As a result of studies conducted under auspices of Federal Aid in Wildlife Restoration, Project California 6R, many management problems concerning valley quail have been solved and the results published in a University of California Bulletin entitled "Increasing Valley Quail in California" by John T. Emlen, Jr. and Ben Glading. This bulletin points out that valley quail management is strictly a problem of local land management; that quail only can be increased to the advantage of quail by improving local habitat conditions, such as water, cover, feed and predation. It is emphasized that merely raising birds in pens and dumping them into unsuitable habitat is worthless.

One method for improving quail habitat has amply proven its value on an experimental basis. This device, known as the "Gallinaceous Guzzler" provides water in dry areas without the benefit of springs, seeps, pipelines, etc., by collecting rainwater and storing it underground for quail use. In all, 13 of these outfits have been installed to date: Five in San Benito County, three in Fresno County, three in Riverside County, and two in San Bernardino County. All have proven their value by establishing centers of quail population in areas formerly devoid of these birds. Other states, including Arizona, New Mexico and Oregon have become interested in similar devices and are highly enthused as to their

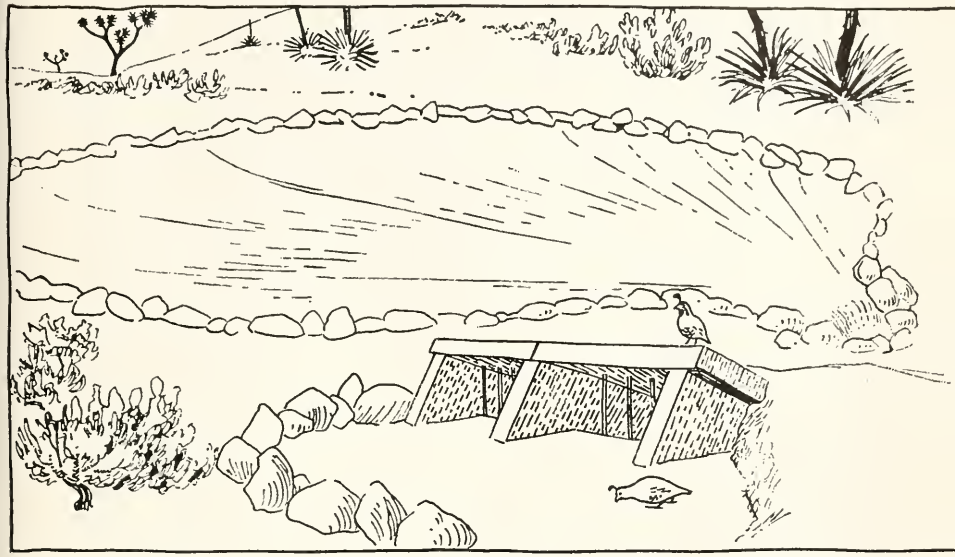


FIGURE 13. The "Gallinaceous Guzzler." This is a device to supply water to quail and other small game in arid areas in California. This self filling watering unit is inexpensive to install and requires little or no maintenance. The "Guzzler" is filled by winter rainfall and stores water underground for summer use by quail. The birds get the water by descending a ramp.

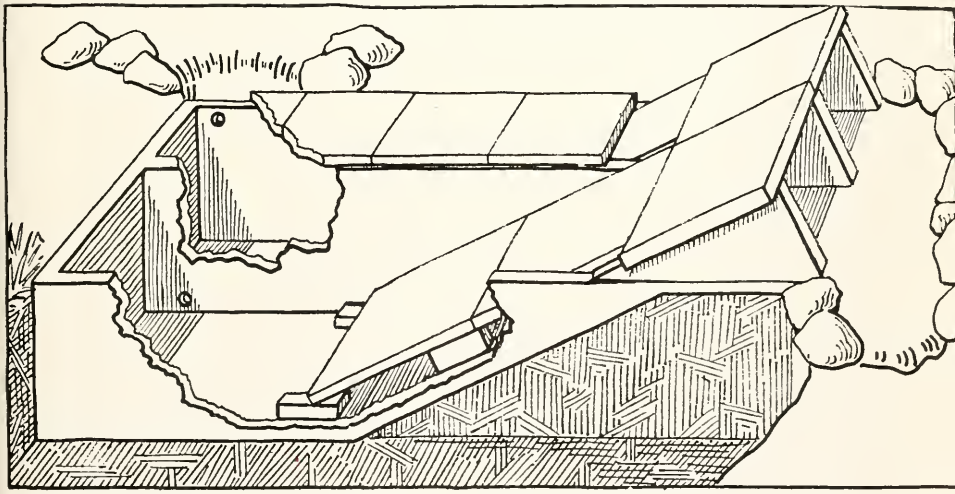


FIGURE 14. Cutaway of "Gallinaceous Guzzler." This shows the details of construction of the "Gallineaceous Guzzler." All construction is of concrete. The underground tank holds about 750 gallons of water. Concrete roof and baffle slabs retard summer evaporation. The rain collecting apron is made of concrete covered with asphalt emulsion; the size of the apron is calculated on the basis of the minimum recorded rainfall for the area in which the "Guzzler" is installed.

value for arid land game. The U. S. Soil Conservation Service is negotiating a program for installing them in Southern California and the other southwest states.

Other methods of improving quail habitat include control of cover by planting native and introduced shrubs; by thinning extensive brush areas; by proper management of food patches, and where the occasion demands, proper predator control, including the control of ground squirrels. One new method of ground squirrel control developed recently by the U. S. Fish and Wildlife Service gives promise of controlling ground squirrels without killing quail. It involves the use of the new poison "1080" together with yellow dyed bait. This poison has been tested by the Division of Fish and Game and is considered safe for use in quail areas when handled according to regulations of the California State Department of Agriculture.

Sportsmen throughout the State have become conscious of the findings of the quail study and are asking for aid in quail habitat management. As a result, the division is instigating a program to aid ranchers and sportsmen who are interested in developing quail populations on local areas. A new Federal Aid in Wildlife Restoration Project, 26D, is being written up to accomplish this purpose in the south coastal ranges from San Francisco to Santa Barbara. If this program proves successful, it will be followed by similar projects in other areas of the State.

In order to determine similar management procedures for mountain quail and ringnecked pheasants, two new Federal Aid research projects, (19R and 22R) have been started. The pheasant study was preceded by work done by the Bureau of Game Conservation in the Gridley area. Some preliminary results of the pheasant study include the relation of blackbird control methods to pheasant population. It is tentatively concluded that if this control is done under methods presented by the California Department of Agriculture, only negligible damage to pheasants will result.

It is too early to say at this time what definite conclusions will ensue from the new pheasant and mountain quail studies, but it is hoped that practical recommendations for management of these species will be forthcoming.

BEAVER RESTORATION PROGRAM

In the course of this biennium the Federal Aid in Wildlife Restoration Project California 18-D, "Beaver Live Trapping and Transplanting" was approved and in operation seasonally for a period of eight months.

During this period 44 beaver transplantings were made to new locations not previously occupied by beaver in 17 counties of the State. The animals consisted of 77 males, 80 females, and 13 sex unknown, a total of 170 animals. The personnel of this project has been one experienced beaver trapper and assistant.

Some of the early experimental beaver plantings made by the Division of Fish and Game and U. S. Forest Service are showing results worthy of mention for the benefits gained in reference to future operations in game management work.

The beaver planted late in 1934 at Rowland Creek, Plumas County, have more than proved their worth in the following factors: Control of

soil erosion, maintenance of a continuous flow of the stream during the low water period of the year, and restoration of the large stream irrigated meadow for livestock. Stream improvement has developed additional fishing waters where there was practically none prior to the introduction of the beaver. By 1941, numerous fishermen from various parts of the State were enjoying excellent fishing from waters impounded behind a series of 30 beaver dams over a distance of 1¼ miles. The distribution of surplus animals from this location to other streams where their accomplished results have been equally as favorable and of much interest to landowners and agencies faced with the problem of land utilization.

Another outstanding demonstration is the colony of beaver introduced into Ackerson Creek, Tuolumne County, early in 1940. Only three animals were used to start this experiment. The stream bed was eroded to the degree where the water table had dropped very low and was of practically no value for subirrigation to an adjacent 400 acre meadow along both banks of the stream. The meadow no longer was suitable for livestock and the stream was drying up for a short period in the summer months. By 1944, the beaver had constructed a series of 18 dams down the length of the meadow. The stream was flowing continuously throughout the year, the water table was again normal, and the meadow was restored, furnishing grazing for livestock. The stored water back of the beaver dams was creating habitat for fishlife and many limits of fish were reported taken by fishermen.

Another example of stream improvement by transplanted beaver is Smithneck Creek in Sierra County. Five animals were transferred there in July of 1943 from Rowland Creek, Plumas County. In June of 1946 the animals had constructed eight large dams. The impounded waters were raising the water table in the lands adjacent to the beaver ponds, creating a better growth of grass for stock grazing. Fishermen report an increase in the size and numbers of fish caught since the addition of the beaver dams in the stream. Ducks have been observed nesting in the vicinity of the ponds for the past two seasons.

The restoration and introduction of these valuable animals is being administered with caution as regards other interests and any definite conclusions regarding the economic value of the animals are stated with reservations. However, if certain facts and opinions obtained so far are indicative of benefits to be derived with proper management, it will justify activities on a much larger scale in the future.

PARASITES AND DISEASES

In August, 1945, the disease laboratory staff moved into new quarters located in Strawberry Canyon on the campus of the University of California in Berkeley. This has greatly facilitated our work but with the end of the war and the return of service men to the staff, as well as the expansion of our program, the facilities are again proving inadequate and crowded.

Studies on deer in the coastal counties presented further evidence that the parasites of the digestive tract are the chief cause of losses, particularly among fawns and yearlings, while the mule deer of the northeastern portion of the State, including the winter deer herd which migrates into our State from Oregon, apparently are not greatly infected

with these parasites. Liver flukes have been found to be common in deer in areas where these parasites are a serious problem with cattle and sheep, but in areas where domestic livestock are not infected, deer also are free of this parasite. A type of papilloma, or skin tumor, occasionally seen in cattle, has been observed on several deer from Marin County. An extensive survey was conducted to determine the incidence and possible importance of a round worm parasite that occurs in the feet of deer. Although large percentages of deer were found to be infected in many areas of the State, it did not seem that these parasites were causing much suffering or debilitating results in the infected animals. Studies were conducted on the nasal bots of deer and the fly responsible for this infection was determined.

Examination of a number of antelope during the special hunting seasons revealed that although several types of parasites occurred in these animals, they were in such small numbers as to be causing no harm.

Further investigations were made in an effort to determine the source of a so-called "iodine" condition of ducks in the lower San Francisco Bay area. J. B. Swim, toxicologist for the city and county of San Francisco collaborated in this study. No iodine is involved in the condition although the ducks develop a medicinal odor somewhat resembling iodine. This odor is readily distinguishable from the sewer smell which develops in some ducks on the bay which feed extensively at the outflows of several sewer disposal areas.

This condition in the ducks was first observed by hunters and game wardens in the years following cessation of extensive feeding of grain by the various duck clubs in the area. Apparently the shortage of food forces the ducks remaining in the area to consume much algae which grows particularly abundant in some of the marshes and salt ponds bordering the bay. When dried, this material gives off the characteristic odor. When fed to healthy ducks, these birds develop the odor which rapidly permeates their muscle tissue. Ducks which feed on this material sometimes can be recognized immediately by the odor when shot, but in many cases the sickening aroma is not evidenced until the flesh is heated or while cooking in the oven. The condition causes no noticeable harmful effects on the birds; they remain in good flesh and apparently recover when they leave the area or cease feeding on the algae. The chief problem presented by this condition is the fact that many hunters discard such birds when them come to bag, thus creating a considerable waste.

The program of studies on the blood and other parasites of quail has been continued, and now is expanding to include similar investigations on the diseases of mountain quail and pheasants. Field samples obtained chiefly through the cooperation of the Associated Sportsmen of California and other hunters have added much to our knowledge of the distribution of some of the parasites of quail. Laboratory studies on fly-borne *Haemoproteus*-malaria showed that infected birds can harbor the parasites in their blood continuously over a period of several years without being subjected to possible reinfection and that the large parasitic fly which occurs on the birds is capable of transmitting the infection just as the smaller species of fly was known to be a vector.

Collateral with our studies on the diseases of game birds, comparable information is being obtained on other species of birds. It was found that

magpies and crows in Lassen County frequently become infected with malaria before they are able to fly. This may be a significant finding in view of the fact that the greatest losses that occur in wild game birds is during their first few weeks of life. An extensive program is being undertaken to study the epidemiology of bird malaria in the Bakersfield area in collaboration with the University of California and the United States Public Health Service to determine possible relationships to the encephalitis of horses and man since both diseases are mosquito-borne.

Observations at the state game farms have revealed frequent losses from diseases such as pullorum, tuberculosis and gapeworm. Programs are being developed with the aim toward eradication of these diseases. A pullorum disease control program already has been instituted modeled somewhat along the lines of the pullorum disease control program which the State Department of Agriculture has in force for the domestic poultry industry.

Through the cooperation of game wardens and other field personnel of the Division of Fish and Game and several hunters we have had opportunity to examine a variety of animals for evidence of disease. Further studies are in progress in an effort to learn more of the significance of disease evident in such animals and their possible relationships to the animals in nature.

PUBLICATIONS AND PROGRAM

A list of the publications prepared by members of the staff during the biennium will be found in the appendix, page 65.

It is planned that the program of the Bureau of Game Conservation will be greatly expanded in the next biennium thus permitting investigations on many problems in need of solution for the most efficient conservation of our mammals and birds. With the start of the next biennium, investigations on the food habits of animals will be reestablished. The Bureau of Game Farms will be incorporated into the Bureau of Game Conservation and it is felt that this consolidation will greatly increase the efficiency of the two programs of propagation and planting, and conservation and management.

REPORT OF BUREAU OF GAME FARMS

The Bureau of Game Farms in the past biennium has maintained production of upland game birds in captivity for purposes of restocking new areas or replenishing depleted stock in other areas.

The main production units were the Yountville Game Farm at Yountville, Napa County and the Los Serranos Game Farm at Chino, San Bernardino County.

Besides the above mentioned units, a number of smaller units were operated by the State, together with many maintained in cooperation with sportsmen's groups. These usually consist of holding pens where young birds can be reared to an age favorable for release. Some, however, maintain birds for egg production as well. The eggs from the latter were shipped either to the game farm at Yountville or the one at Chino.

An abode brooder house has been constructed at the unit in the Kern County Park near Bakersfield. A new unit near Fresno will handle eggs from the Central California district. The number of small units is being increased.

Sportmen's groups in the vicinity of Chico, Marysville, Porterville and Brawley have asked for game farm units and these have been approved. At Porterville the local sportsmen already have made available 48 pens and the Chico club had deeded a piece of property to the State to be used as a site for the unit there. Construction on the other units will be undertaken as soon as possible. Other units in operation, not mentioned above, are located at Redding, Willows, Sacramento, Bakersfield, Castaic and Valley Center and there are many other smaller units containing only holding pens.

Maintaining production during the war years was a difficult task for many reasons. Chief among these was the shortage of personnel. With so many of the younger employees in the armed services, operation was maintained by the older men, supplemented by boys and girls of high school age, and war veterans in the process of rehabilitation who put in long hours of hard and confining work. Evening classes, once a week for a year and a half, consisting of lectures and motion pictures on Game Farming and Conservation did much toward training the veterans and helping them with their problems. Several have continued on with the work.

As the war came to an end many men returned to their old positions and although the staff still is short of sufficient experienced personnel the outlook is promising.

Another problem confronting the efficient operation of the game farm program was the procurement of sufficient and adequate feed. By substituting where possible, and by frequently obtaining discarded grains, this shortage was somewhat overcome. However, the resulting lack of proteins, minerals and vitamins in these feeds had its effects and the birds produced were not quite up to those of former years. The birds took longer to put on weight and their feathering was none too good. It is expected that the feed situation will improve and that conditions arising through lack of a proper feed supply will be alleviated.

An extensive amount of new battery brooder equipment was in operation. This material is proving very satisfactory at the larger units and it is felt that the equipment will prove even more efficient when new housing facilities can be provided. However, it was found that these batteries are most efficient only with large numbers of birds. The small units, receiving as few as 500 day-old chicks per week, find the battery brooder method is not as efficient as the old method of brooding by pens.

Requests for bulletins and other information were received from many sources, including several from soldiers still in the armed forces who apparently were interested in the possibility of entering into upland game bird farming when they returned to civilian life.

During the biennium, pheasants of the Chinese and Mongolian varieties produced well at the various game farms. The hens averaged about 55 eggs per season. Losses due to cracked, culled and infertile eggs totaled approximately 15 percent. Not all of the chicks were up to standard and some were disposed of. Of the total eggs set, approximately 65 percent hatched into A-1 chicks.

The egg production of the Chukar partridge was about 40 eggs per hen. Normal losses were incurred from infertile, cracked and culled eggs, and substandard chicks. About 65 percent of the eggs set hatched into A-1 chicks.

The bureau found that valley quail are the most difficult to raise, probably because of their susceptibility to various diseases when concentrated in pens. Egg production of the valley quail was comparable with that of Chukar partridge. Infertility was approximately 20 percent, and the hatchability of all quail eggs set was approximately 70 percent.

A total of 114,075 birds were distributed from the Yountville and Los Serranos Game Farms during the biennium. This figure includes many transfers of day old chicks, and these birds suffered the normal casualties incident to work of this nature. A proportion of the total distribution was utilized as breeding stock at smaller units. During the two years, despite all handicaps, a total of 65,638 birds were liberated.

A tabulation by counties, showing the number of game birds, including quail, pheasant, turkeys and Chukars, which were liberated will be found on page 138 of the appendix.

REPORT OF THE BUREAU OF LICENSES

In the distribution and sale of licenses this bureau has three objectives:

First, to establish as many agencies throughout the State as possible so as to enable the sportsmen to obtain licenses whenever and wherever they may apply. Second, to maintain a harmonious and friendly relationship with these agencies in order to secure their cooperation, since they are the means by which we are able to sell the licenses to the sportsmen. Third, to give the agencies the best possible service in supplying them with licenses for the purpose of overcoming the possibility of a shortage when such licenses are most needed by the sportsmen.

During the biennium which covered the war years we were somewhat handicapped in maintaining proper distribution of licenses throughout the State because many of our former agents had gone out of business or, due to lack of help and inability to obtain sporting goods merchandise, had discontinued handling licenses. During these years the sale of licenses showed a slight decrease which, in a measure, was caused by wartime restrictions on travel and so forth. However, in the latter part of 1944 it was noticeable that there was a greater demand on the part of sportsmen for licenses.

The bureau anticipated that the end of World War II would stimulate our license sales. It, therefore, was considered advisable that we change the method of distributing licenses to our agents.

There were two methods of distribution:

One, where the agent paid cash in advance for the value of licenses needed, and any licenses that remained unsold were returned, and the value refunded to them. These agents were paid 5 percent of the amount of sales accounted for and a majority of the agencies throughout the State operated under this plan.

Two, a method where the agent was placed under a bond and licenses were sent to him on a credit or consignment basis. The agent then remitted regularly on licenses that were sold, and as compensation he was paid three and a half percent ($3\frac{1}{2}\%$) of the amount accounted for.

With the expectation of an increase in our license sales it was believed that the first, or cash plan of distribution, would not be satisfactory because many of our agents had small business establishments and probably did not have sufficient capital available to purchase the number of licenses needed to serve the sportsmen.

In the 1945 session of the State Legislature a bill previously approved by the Fish and Game Commission, was introduced. This bill placed all license distribution entirely on a credit, or consignment basis and allowed the agent 5 percent of the amount of sales accounted for. This bill was given approval and became effective on January 1, 1946 with the issuance of the 1946 angling licenses.

There was considerable work involved in contacting all of the former cash agents, getting them signed up under the new method, and determining the value of licenses of various kinds and denominations that should be sent to them. We were handicapped also in not being able to

obtain the necessary office equipment to keep the records controlling the distribution and license sales of each agent.

It is our purpose to carry on this work along the same lines that a large commercial concern would use to control their credit accounts—however, with this difference—we considered it our responsibility to keep the agent supplied with licenses at all times, whether he requisitioned the licenses or not. During the six month period—January 1 to June 30, 1946—that this system has been in operation, it has proved very satisfactory and we believe we are in a position to give the sportsmen better service than we have in the past. To carry out the credit distribution, the State is divided into five districts with a branch office in each district to serve all of the agents of that particular district. The principal office of the bureau is maintained at Sacramento with branches in Redding, Sacramento, San Francisco, Los Angeles and Fresno.

Several years ago the premium rate on our license bond was $5 per thousand. Due to close supervision of the agents, and by holding the claims filed with the surety company to a minimum, the premium rate was reduced, first to $3, then to $2.50, and with the renewal of our schedule bond in February of 1946, a further reduction to $2 per thousand was made.

The pheasant tag law, which became effective in 1943, was repealed by the 1945 Legislature—consequently there were no pheasant tag sales for that year. The sale of pheasant tags for 1943 amounted to $121,186. In 1944 the sale was $105,923.

The commission, acting under the provisions of Section 1346, Fish and Game Code, provided for antelope hunts in both 1944 and 1945. In 1944, 3,910 persons made applications. In 1945 the number of applicants had increased to 4,675. At the time of the drawing in 1945, of the first 500 names drawn, 119 were from women.

The commission did not set a season for elk hunting in either 1944 or 1945. Consequently no drawings were held.

The trend of increased license sales has been caused by the increased population and returned service men, but the new all credit method of license distribution has practically eliminated area shortages that formerly occurred, and has also contributed to the increased sale.

LIST OF PUBLICATIONS

PUBLICATIONS BY STAFF MEMBERS OF THE BUREAU OF MARINE FISHERIES

Fish Bulletin No. 61. Results of Tagging Experiments in California Waters on the Sardine, *Sardinops caerulea*. 90 pp.

Fish Bulletin No. 62. Catch per-Unit-of-Effort in California Waters of the Sardine, *Sardinops caerulea*, Ralph P. Silliman and Frances N. Clark. 76 pp.

Fish Bulletin No. 63. The Commercial Fish Catch of California for the Years 1943 and 1944. By the Staff of the Bureau of Marine Fisheries. 81 pp.

Fish Bulletin No. 64. The Biology of the Soupfin, *Galeorhinus zyopterus*, and Biochemical Studies of the Liver. 96 pp. (In press at close of biennium)

The "Balloon" Type Otter Trawl for Rockfishes. W. L. Scofield. California Fish and Game, Vol. 31, No. 1, pp. 12-15.

A Preliminary Report on the Fishery Resources of California in Relation to the Central Valley Project. Richard Van Cleve. California Fish and Game, Vol. 31, No. 2, pp. 35-52.

Occurrence of the Bramble Shark, *Echinorhinus brucus*, in California. Carl L. Hubbs and Frances N. Clark. California Fish and Game, Vol. 31, No. 2, pp. 64-67.

Program of the Bureau of Marine Fisheries. Richard Van Cleve. California Fish and Game, Vol. 31, No. 3, pp. 80-138.

The Pacific Tunas. H. C. Godsil. California Fish and Game, Vol. 31, No. 4, pp. 185-194.

The Shark, *Carcharhinus azureus*, in Southern California Waters. D. H. Fry, Jr. and P. M. Roedel. California Fish and Game, Vol. 31, No. 4, p. 209.

Two Unusual Flatfishes from Monterey Bay. J. B. Phillips. California Fish and Game, Vol. 31, No. 4, pp. 210-211.

An Albino California Sardine. J. B. Phillips. California Fish and Game, Vol. 32, No. 1, pp. 31-32.

Effect of Red Water on Marine Life in Santa Monica Bay, California. Hermann Sommer and Frances N. Clark. California Fish and Game, Vol. 32, No. 2, pp. 100-101.

Recovery of Tagged Soupfin Shark. William Ellis Ripley. California Fish and Game, Vol. 32, No. 2, pp. 101-102.

Comments on Bureau of Reclamation's Comprehensive Plan for Water Resources Development, Central Valley Basin, California. By Bureau of Marine Fisheries. (Mimeographed)

Vertebral variation with Size in *Clevelandia ios*. Charles R. Clothier. Copeia, No. 3, pp. 113-116. (In press at close of biennium)

PUBLICATIONS BY STAFF MEMBERS OF THE BUREAU OF FISH CONSERVATION

Twenty-five years ago in California Fish and Game, Brian Curtis. California Fish and Game, Vol. 30, No. 3; Vol. 30, No. 4; Vol. 31, No. 1; Vol. 31, No. 2; Vol. 31, No. 4; Vol. 32, No. 1.

Fisheries and the Central Valley Project, Brian Curtis. California Fish and Game, Vol. 31, No. 2, p. 73.

The Fishery of the Lower Colorado River, William A. Dill. California Fish and Game, Vol. 30, No. 3, pp. 109-211.

A Preliminary Report on the Fishery of Millerton Lake, California. William A. Dill. California Fish and Game, Vol. 32, No. 2, pp. 49-70.

Review of "The Fishes of the Bering Sea and Neighbouring Waters, Its Origin and Zoogeography," Anatoly P. Andriashev, Leo Shapovalov, Copeia, 1944, No. 4.

A New Fish Screen for Hatchery Use, J. H. Wales. California Fish and Game, Vol. 31, No. 3, pp. 157-159.

Notes on an Epizoic Alga. J. H. Wales. California Fish and Game, Vol. 32, No. 1, pp. 30-31.

Fungus in Air Bladder of Striped Bass. J. H. Wales. California Fish and Game, Vol. 32, No. 1, p. 31.

Sturgeon from Shasta Lake, J. H. Wales. California Fish and Game, Vol. 32, No. 1, p. 31.

ADMINISTRATIVE REPORTS (UNPUBLISHED)

Reports prepared by Brian Curtis.

Angling Catch Records, 1943. Submitted December 12, 1945.

The Frog Lake (Nevada County) Fishery in 1944. Submitted February 13, 1945.

The Frog Lake (Nevada County) Fishery in 1945. Submitted May 6, 1946.

Reconnaissance of Cedar Creek, San Diego County, with reference to Stream Improvement Possibilities. Submitted June 27, 1945.

Fishery Program for Conn Valley Reservoir, Napa County. Submitted August 27, 1945.

Fishery Problems of the Reservoirs of the San Diego City Water Supply. Submitted November 16, 1945.

Reports prepared by William A. Dill

Sites for Small Artificial Trout Lakes. Submitted July 25, 1944.

Sites for Small Artificial Trout Lakes. Report No. 2. Submitted September 18, 1944.

A Preliminary Survey of Big Creek below Huntington Lake, Fresno County, California. Submitted December 8, 1944.

The Mechanics of Stocking and Management Procedure. Submitted January 23, 1945.

How to File and Index Stream and Lake Records. Submitted March 17, 1945.

The Fishery of Millerton Lake, Fresno-Madera Counties. Progress Report No. 1. The Creel Counts of May 29 and 30, 1945. Submitted June 13, 1945.

A Report on the Proposed Diversion of Water From Tributaries of the South Fork of the San Joaquin River near Florence Lake, Fresno County. Submitted September 18, 1945.

The Little Kern River Drainage, Tulare County. Progress Report No. 2. Submitted November 19, 1945.

Reports prepared by William A. Dill, Scott M. Soule, and Charles K. Fisher, Jr.

A Preliminary Report on the May 29, 1946, Creel Count at Millerton Lake, California. Submitted June 8, 1946.

Reports prepared by William A. Dill and J. H. Wales

The Fishery of Shasta Lake, Shasta County. Report No. 1. A Preliminary Account. Submitted April 6, 1945.

Reports prepared by Leo Shapovalov

Preliminary Report on the Fisheries of the Russian River System, California. Submitted August 25, 1944.

Preliminary Report on the Fisheries of the Santa Ynez River System, Santa Barbara County, California. Submitted September 15, 1944.

Preliminary Report on the Fisheries of the Santa Maria River System, Santa Barbara, San Luis Obispo, and Ventura Counties. Submitted September 15, 1944.

Creel Census at Stevens Creek and Stevens Creek Reservoir, Santa Clara County, May 1 and 2, 1943. Submitted November 8, 1944.

Creel Census at Stevens Creek and Stevens Creek Reservoir, Santa Clara County, May 1, 1944. Submitted November 10, 1944.

Fish Rescue and Stream Improvement Work in the North Coast Area in 1942. Submitted December 29, 1944.

Fish Rescue and Stream Improvement Work in the North Coast Area in 1943. Submitted February 15, 1945.

Fish Rescue and Stream Improvement Work in the North Coast Area in 1944. Submitted March 20, 1945.

Creel Census at Stevens Creek and Stevens Creek Reservoir, Santa Clara County, May 1, 1945. Submitted May 17, 1945.

Observations on Controlled Flows in the Eel River, Lake, and Mendocino Counties, September 25 and 26, 1945. Submitted October 31, 1945.

Pollution and Fish Mortality in Lower Salinas River, Monterey County, October, 1945. Submitted November 9, 1945.

The Management of a Relatively Small Coastal Steelhead Stream System, with Special Reference to Big Creek, Monterey County. Submitted March 5, 1946.

Recommendations for the Management of Arroyo Corte Madera del Presidio and Old Mill Creek, Marin County, California. Submitted April 10, 1946.

Creel Census at Stevens Creek and Stevens Creek Reservoir, Santa Clara County, May 1, 1946. Submitted May 21, 1946.

Reports prepared by J. H. Wales

Fin Regeneration and Comparative Growth Rate in Trout. Submitted September 21, 1944.

Observations on Fish Screens in the Shasta River Drainage. Submitted September 28, 1944.

Studies on Trout Anemia. Submitted October 6, 1944.

The Klamath River at Different Stages of Flow. Submitted November 13, 1944.

Castle Lake Report for 1944. Submitted May 28, 1945.

Summary of 1944 Hatchery Disease Reports. Submitted May 24, 1945.

The Hardhead Problem in the Sacramento River Above Shasta Lake. Submitted February 19, 1946.

Reports prepared by Chester Woodhull

A Brief Report on the Preston School of Industry Reservoir. Submitted March 20, 1946.

The Drainage System of Bass Lake, El Dorado County. Submitted March 29, 1946.

PUBLICATIONS BY STAFF MEMBERS OF THE BUREAU OF GAME CONSERVATION

Pittman-Robertson Projects

PROJECT 5-R: A SURVEY OF THE FUR RESOURCES OF THE STATE OF CALIFORNIA.

The Fur Catch in California, 1940-1941, Howard Twining. California Fish and Game, Vol. 30, No. 4, pp. 242-246.

A Progress Report on Beaver Management in California, Arthur L. Hensley. California Fish and Game, Vol. 32, No. 2, pp. 87-99.

PROJECT 6-R: THE MANAGEMENT OF VALLEY QUAIL IN THE SOUTH COAST COUNTIES OF CALIFORNIA.

The Kettlemen Hills Quail Project, Ben Glading, R. W. Enderlin, and Henry A. Hjersman. California Fish and Game, Vol. 31, No. 3, pp. 139-156.

Valley Quail Under Private Management at the Dune Lakes Club, Ben Glading, David M. Selleck, and Fred T. Ross. California Fish and Game, Vol. 31, No. 4, pp. 167-183.

Increasing Valley Quail in California, John T. Emlen, Jr., and Ben Glading. University of California Agriculture Experiment Station Bulletin. 695, 56 pp.

Disease Studies

The blood protozoa of North American birds. Bird-Banding 15: 89-112.

Notes on a water ouzel. Carlton M. Herman and Pedro Galindo. Condor, Vol. 46, p. 297.

Studies on the condition of California Mule deer at Sequoia National Park. Joseph S. Dixon and Carlton M. Herman, California Fish and Game, Vol. 31, No. 1, pp. 3-11.

Hippoboscid flies as parasites of game animals in California. Carlton M. Herman. California Fish and Game, Vol. 31, No. 1, pp. 16-25.

Gapeworm in California quail and chukar partridge. Carlton M. Herman. California Fish and Game, Vol. 31, No. 2, pp. 68-72.

Cephenemyia jellisoni Townsend (Diptera Cuterebridae) reared from nasal bot of black-tailed deer. Carlton M. Herman. Pan-Pacific Entomologist, Vol. 21, p. 120.

Deer management problems as related to diseases and parasites of domestic range livestock. Carlton M. Herman. Transactions of the 10th North American Wildlife Conference, American Wildlife Institute, pp. 242-246.

Some worm parasites of deer in California. Carlton M. Herman. California Fish and Game, Vol. 31, No. 4, pp. 201-208.

Preliminary report on the distribution of *Onchocerca cervipedis*. Carlton M. Herman and Arthur I. Bischoff. Journal of Parasitology, Vol. 31, p. 16, (Supplement).

Quail disease studies. Carlton M. Herman. West Coast Sportsman, Vol. 2, pp. 13-14.

The nose bot fly of deer. Carlton M. Herman, California Fish and Game, Vol. 32, No. 1, pp. 17-18.

Duck Diseases at Tulare Lake. Donald D. McLean, California Fish and Game, Vol. 32, No. 2, pp. 71-88.

Miscellaneous

The Prong-horned Antelope in California. Donald D. McLean, California Fish and Game, Vol. 30, No. 4, pp. 221-241.

Late Spring Spawning of Chinook Salmon. *(Oneorhynchus tschowytscha)* Donald D. McLean, California Fish and Game, Vol. 31, No. 4, pp. 111-112.

Pheasants Flown to Guam. Janet Quinn, California Fish and Game, Vol. 32, No. 1, pp. 32-33.

Twenty-five years of the California Fish and Game Commission, J. S. Hunter, California Fish and Game, Vol. 32, No. 2, pp. 39-47.

APPENDIX

STATEMENT OF EXPENDITURES (COMPLETE) BY OBJECT

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)

Function	Salaries and wages	Operating expenses	Equipment	Total
Administration—101				
Seasonal	$2,394 39			$2,394 39
Departmental librarian	2,460 00			
Educational directors	3,435 00			
Executive secretary	5,239 92			
Fish and game commission	180 00			
Janitor	1,980 00			
Junior stenographer-clerk	334 61			
Senior stenographer-clerk	2,580 00			
Supervisory clerk grade 1	2,940 00			
Telephone operator	1,980 00			21,129 53
Accident and death claims		$5,876 35		
Automobile		4,849 34		
Freight, cartage, express		590 82		
Legal advertising		930 90		12,247 41
Library		48 90	$397 76	446 66
Light, heat and power		1,479 23		1,479 23
Office		4,002 80	340 29	4,343 09
Postage		4,508 08		
Premium on bonds		48 00		
Printing fish and game magazine		3,510 76		
Printing, general		1,939 21		
Pro rata attorney general service		6,000 00		
Pro rata departmental administration		27,878 47		
Pro rata general fiscal administration		14,092 65		
Pro rata Personnel Board service		4,260 40		
Rent		12,362 44		
Telephone and telegraph		5,644 77		
Travel		3,659 37		83,904 15
Total administration	$23,523 92	$101,682 49	$738 05	$125,944 46
Patrol and Law Enforcement—104				
Assistant fish and game warden seas patrol	$38,807 21			
Assistant chief fish and game patrol	12,090 00			
Captain fish patrol boat	3,719 25			
Chief fish and game patrol	4,680 00			
Deckhand fish patrol boat	486 75			
Fish and game patrol captain	44,760 00			
Fish and game warden	245,565 60			
Intermediate account clerk	5,051 50			
Intermediate stenographer clerk	4,980 00			
Marine Diesel Engineman	2,250 00			
Senior Account clerk	1,295 00			
Senior stenographer clerk	2,580 00			$366,265 31
Airplane		$106 00		106 00
Automobile		52,207 54	$83 17	52,290 71
Boats		6,943 00	5,211 37	12,154 37
Field		2,777 95	399 79	3,177 74
Freight		167 76		
Light, heat and power		66 63		234 39
Office		456 72	14 60	471 32
Postage		859 84		
Premium on bonds		861 75		
Printing		627 52		
Rent		9,478 20		
Telephone and telegraph		8,482 51		
Travel		58,155 45		78,465 27
Total Patrol and Law Enforcement	$366,265 31	$141,190 87	$5,708 93	$513,165 11
Marine Fisheries—105				
Seasonal	$3,083 97			$3,083 97
Assistant chief	4,080 00			
Chief	4,640 00			
Deckhand fish patrol boat	1,605 00			
Fisheries statistician	3,420 00			
Intermediate account clerk	12,459 85			
Intermediate typist clerk	251 46			
Intermediate stenographer clerk	1,183 40			
Janitor and janitress	1,980 00			
Junior aquatic biologist	6,020 49			

STATEMENT OF EXPENDITURES (COMPLETE) BY OBJECT

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Marine Fisheries—105—Continued				
Key punch operator	$4,029 93			
Net man and boatswain	2,340 00			
Senior account clerk	385 18			
Senior fisheries researcher	10,676 49			
Senior stenographer clerk	2,580 00			
Supervising fisheries resources	11,205 00			
Supervising key punch operator	1,024 59			$67,881 39
Automobile		$1,866 25	$16 06	1,882 31
Cooperative research		5,096 71		5,096 71
Field		4,254 58	4 00	4,258 58
Fish specimens and tagged fish		734 50		
Fish tags		235 28		
Freight, cartage, express		129 76		1,099 54
Laboratory		3,049 48	221 22	3,270 70
Light, heat and power		573 87		573 87
Office		506 12	62 43	568 55
Postage		35 00		
Printing		3,713 56		
Rent		5,512 51		
Telephone and telegraph		135 46		
Travel		8,496 21		17,892 74
Total Marine Fisheries	$70,965 36	$34,339 29	$303 71	$105,608 36
Fish Conservation—106				
Seasonal	$49,905 82			$49,905 82
Assistant fish and game warden	1,980 00			
Assistant fish hatchery supervisor	16,860 00			
Bass hatchery foreman	2,005 00			
Chief	5,040 00			
Economic biologist	3,600 00			
Fish and game toxicologist	4,080 00			
Fish hatchery assistant	64,220 24			
Fish hatchery foreman	36,985 28			
Fish hatchery man	30,224 79			
Groundsman and flower gardener	555 75			
Intermediate clerk	2,027 53			
Intermediate stenographer clerk	1,175 56			
Laborer	165 00			
Senior account clerk	2,580 00			
Senior fisheries biologist	6,120 00			
Senior stenographer clerk	2,713 76			
Student biologist	261 00			
Supervising fish biologist	3,840 00			
Supervisor, fish hatcheries	4,350 00			
Telephone operator	57 82			$188,841 73
Automobile		$17,738 06		
Chemicals		677 22		
Eyed eggs		1,124 20		
Fish foods		93,383 10		
Freight, cartage, express		5,843 97		
Fuel		3,505 42		
Ice		1,673 70		
Light, heat and power		5,969 84		
Office		$190 84		130,106 35
Operating equipment		8 52	$1,096 37	1,104 89
Operating service		2,162 11		
Operating supplies		3,362 39		
Postage		515 33		
Printing		250 53		
Rent		16,000 37		22,290 73
Structural maintenance		2,097 48	169 56	2,267 04
Telephone and telegraph		1,446 64		
Travel		13,852 14		15,298 78
Total Fish Conservation	$238,747 55	$169,801 86	$1,265 93	$409,815 34

STATEMENT OF EXPENDITURES (COMPLETE) BY OBJECT

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Engineering—107				
Seasonal	$39 75			$39 75
Assistant hydraulic engineer	3,532 20			
Chief	5,040 00			
Intermediate stenographer clerk	1,920 00			
Junior civil engineer	2,580 00			
Laborer	3,643 91			16,716 11
Automobile		$891 28		
Blueprinting		120 01		
Field		146 43		
Freight, cartage, express		1 92		
Inspection of fish screens		63 02		1,222 66
Office		135 30	4 61	139 91
Rent		559 79		
Telephone and telegraph		1 90		
Travel		3,243 69		3,805 38
Total Engineering	$16,755 86	5,163 34	$4 61	$21,923 81
Game Conservation—108				
Seasonal	$9,149 52			$9,149 52
Chief	5,040 00			
Economic biologist	7,200 00			
Game bird breeder	1,242 67			
Game refuge supervisor	16,131 85			
Hunter and trapper	35,232 43			
Intermediate stenographer clerk	1,976 92			
Junior economic biologist	869 59			
Laborer	8,155 75			
Lion hunter	6,270 00			
Parisitiologist	2,775 00			
Senior stenographer clerk	2,622 24			
Supervising hunter and trapper	10,220 00			$97,736 45
Temporary help	72 58			72 58
Automobile		$15,872 32		
Field		5,448 30		
Freight, cartage, express		1,196 28		
Light, heat, power		1,054 43		
Lion bounty		4,400 00		27,971 33
Office		166 46	$61 10	227 56
Postage		82 20		
Printing		197 86		
Rent		6,607 74		
Rent		343 22		
Travel		9,459 84		16,690 86
Field			3,571 39	3,571 39
Total Game Conservation	$106,958 55	$44,828 65	$3,632 49	$155,419 69
Game Farms—109				
Seasonal	$14,045 67			$14,045 67
Camp cook	500 48			
Chief	4,640 00			
Game bird breeder	19,330 19			
Game farm superintendent	4,995 00			
Junior stenographer clerk	1,590 00			31,055 67
Auto		$902 07		902 07
Field		15,312 03	$52 00	15,364 03
Freight, cartage, express		175 75		
Light, heating and power		4,074 19		
Office		51 15		
Operating expenses		118 84		
Postage		283 56		
Rent		309 00		
Telephone and telegraph		378 00		
Travel		965 39		6,355 88
Total Game Farms	$45,101 34	$22,569 98	$52 00	$67,723 32

STATEMENT OF EXPENDITURES (COMPLETE) BY OBJECT

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Licenses—111				
Seasonal	$262 08			$262 08
Chief	4,640 00			
Intermediate account clerk	7,132 91			
Intermediate clerk	564 65			
Intermediate stenographer clerk	4,200 00			
Intermediate typist clerk	122 71			
Senior account clerk	5,038 66			
Supervising account clerk grade 1	5,918 70			27,617 63
Temporary help	270 00			270 00
Auto		$657 02		
Freight, cartage, express		1,380 57		
License Commission—cash agents		60,819 43		
License Commission—credit agents		17,888 66		
License identification buttons		14,288 05		
Office		1,283 75		
Postage		3,642 08		
Premium on bonds		1,975 19		
Printing		11,625 09		
Rent		340 20		
Telephone and telegraph		255 13		
Travel		1,178 14		115,333 31
Total Licenses	$28,149 71	$115,333 31		$143,483 02
Construction of Fish Screens and Stream Improvements				
Total Fish Screens	$165 00			$165 00
Unallocated support abatements				—2,005 66
Total Fish and Game support—Ninety-fifth Fiscal Year				$1,541,242 45
Less estimated maintenance deductions				11,523 21
Net total for support—Ninety-fifth Fiscal Year				$1,529,719 24
Additions and Betterments			Detail	
Purchase of land—Redding (for warehouse, shop, garage, etc.)			$3,500 00	$3,500 00
Improvements—				
Construction of ward cottage—Yosemite hatchery			$1,238 22	
Game farms			2,629 80	
Remodel house on Honey Lake refuge			311 14	
Kern hatchery—well project			620 34	
Total Improvements				$4,799 50
Total Additions and Betterments				$8,299 50
Cooperation with Federal Government—Pittman-Robertson Act				
13-D-1			$105 00	
14-D-1			137 57	
11-L-2			3,174 59	
11-L-3			22,050 00	
5-R-1944			3,966 76	
6-4-1944			6,714 02	
15-R-1944			2,093 73	
Total Pittman-Robertson Act				$38,241 67
Less individual abatement from Federal Government pro rata share Pittman-Robertson				$28,659 91
Net total Pittman-Robertson Ninety-fifth Fiscal Year				$9,581 76
Contributed to Employees Retirement Fund				34,734 47
Grand total Fish and Game Preservation Fund—Ninety-fifth Fiscal Year				$1,582,334 97
TRUST				
Special Deposit Fund—				
City of Los Angeles hatchery donation				$60 51

STATEMENT OF EXPENDITURES (COMPLETE) BY FUNCTION

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)

Function	Salaries and wages	Operating expenses	Equipment	Total
Administration—101				
Education and public information	$3,435 00	$190 57		$3,625 57
Executive	7,559 92	4,217 62	$2 77	11,780 31
Exhibits		117 01		117 01
Fish and game magazine		3,510 76		3,510 76
Library	2,255 00	420 97	394 99	3,070 96
Office	10,274 00	93,225 56	340 29	103,839 85
Total administration	$23,523 92	$101,682 49	$738 05	$125,944 46
Patrol and Law Enforcement—104				
Cannery inspection	$21,439 82	$946 28		$22,386 10
Executive	16,755 00	3,031 93	$18 54	19,805 47
Land patrol	268,407 96	105,434 85	454 83	374,297 64
Marine patrol	47,501 03	29,050 38	5,228 18	81,779 59
Office	10,031 50	1,345 39	7 38	11,384 27
Pollution patrol	2,130 00	1,382 04		3,512 04
Total Patrol and Law Enforcement	$366,265 31	$141,190 87	$5,708 93	$513,165 11
Marine Fisheries—105				
Central Valleys Water Project				
Study and salmon	$11,322 66	$5,494 52	$117 13	$16,934 31
Executive	8,720 00	1,049 43	16 06	9,785 49
Fish cannery auditing		5,283 93		5,283 93
Laboratory	3,877 81	1,840 83	100 71	5,819 35
Mackerel	1,385 00	7 70		1,392 70
Office	8,569 94	962 43	62 43	9,594 80
Sardines	10,991 56	1,423 82		12,415 38
Shark investigation	3,425 00	6,651 04		10,076 04
Shellfish and miscellaneous	3,275 00	452 78		3,727 78
Statistics	18,567 66	10,993 57	7 38	29,568 61
Tuna	830 73	179 24		1,009 97
Total Marine Fisheries	$70,965 36	$34,339 29	$303 71	$105,608 36
Fish Conservation—106				
Biological survey	$10,491 84	$1,205 21		$11,697 05
Executive	11,840 00	1,226 58		13,066 58
Field supervision	3,780 00	713 39		4,493 39
Fish food unallocated		71,934 52		71,934 52
Fish planting	1,075 00	1,509 41	$21 53	2,605 94
Fish rescue	11,179 50	3,464 42		14,643 92
Office	8,862 95	468 45		9,331 40
Operating expenses—unallocated		235 15		235 15
Pollution inspection	4,080 00	1,189 65	33 31	5,302 96
Statistical		305 79		305 79
Structural maintenance		214 68		214 68
Alpine Hatchery	450 00	13 25		463 25
Arrowhead Lake Egg Collecting Station		31 65		31 65
Basin Creek Hatchery	5,813 34	1,179 32		6,992 66
Benbow Dam Experimental Station	1,422 50	235 16		1,657 66
Black Rock Springs Ponds		399 99		399 99
Bogus Creek Egg Collecting Station		85 00		85 00
Brookdale Hatchery	6,631 85	2,335 86	2 01	8,969 72
Burney Creek Hatchery	6,283 23	1,074 91		7,358 14
Central Valley Hatchery	4,735 00	2,868 67	43 24	7,646 91
Cedar Creek Hatchery		260 00		260 00
Copco Egg Collecting Station		91 18		91 18
Claremont	410 00			410 00
Copco Egg Collecting Station Addition	104 88			104 88
Coy Flat	645 00	105 19		750 19
Fall Creek Hatchery	6,651 51	692 92		7,344 43
Feather River Hatchery	3,949 74	369 80		4,319 54
Fillmore Hatchery	16,560 94	9,730 35	681 95	26,973 24
Fishing Creek Hatchery		150 00		150 00
Fort Seward Hatchery		1 31		1 31
Hot Creek Hatchery	17,546 08	16,087 27	130 06	33,763 41
Kaweah Hatchery	4,422 30	1,910 96	11 79	6,345 05
Kern Hatchery	3,188 00	1,480 05		4,668 05
Kings River Hatchery	5,655 74	1,814 76		7,470 50
Klamathon Egg Collecting Station		4 32		4 32
Lake Almanor Hatchery	6,246 71	1,665 73	11 79	7,924 23

STATEMENT OF EXPENDITURES (COMPLETE) BY FUNCTION

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Fish Conservation—106—Continued				
Mad River Egg Collecting Station	933 72			933 72
Madera Hatchery	1,251 14	547 40		1,798 54
Mount Shasta Hatchery	43,852 93	16,282 52	71 11	60,206 56
Mount Tallac Hatchery	2,220 02	2,333 00	40 55	4,593 57
Mount Whitney Hatchery	20,979 94	16,325 99	51 63	37,357 56
Prairie Creek Hatchery	5,659 29	2,283 16	5 13	7,947 58
Rearing Reservoir Hatchery		1 00		1 00
Rush Creek Egg Collecting Station	318 49	7 70		326 19
Salt Springs Hatchery	58 50			58 50
San Lorenzo Egg Collecting Station		195 51		195 51
Sequoia Hatchery	3,231 05	2,190 33	148 21	5,569 59
Shasta River Egg Collecting Station	155 00	133 24		288 24
Snow Mountain Egg Collecting Station	2,165 33	408 55		2,573 88
Tahoe Hatchery	7,936 04	2,959 60	11 31	10,906 95
Upper Truckee		10 00		10 00
Yosemite Hatchery	4,769 99	786 46	2 31	5,558 76
Yuba River Hatchery	3,190 00	282 50		3,472 50
Total Fish Conservation	$238,747 55	$169,801 86	$1,265 93	$409,815 34
Engineering				
Engineering	$6,112 20	$2,447 89	$4 61	$8,564 70
Executive	5,040 00	1,121 54		6,161 54
Inspecting fish screens	3,683 66	1,516 84		5,200 50
Office	1,920 00	77 07		1,997 07
Total Engineering	$16,755 86	$5,163 34	$4 61	$21,923 81
Game Conservation				
Duck rescue	$495 97	$389 25		$885 22
Elk refuge	1,070 00	784 05		1,854 05
Executive	11,220 00	2,882 30		14,102 30
Game management	8,279 49	5,396 34	$1,070 47	14,746 30
Grey Lodge Refuge	4,126 27	642 35	10 87	4,779 49
Honey Lake Refuge	1,237 34	1,292 01	1,860 16	4,389 51
Imperial Refuge	2,460 00	264 13		2,724 13
Los Banos Refuge	4,253 01	1,611 10	620 59	6,484 70
Office	4,626 68	346 38		4,973 06
Predatory animal—lion hunting	5,745 00	6,893 21		12,638 21
Predatory animal—trapping	50,135 37	18,642 00	9 30	68,786 67
Research	8,219 83	2,442 29	61 10	10,723 22
Statistics		8 19		8 19
Suisun Refuge	5,089 59	1,273 12		6,362 71
Winter feed and salting of game		1,961 93		1,961 93
Total Game Conservation	$106,958 55	$44,828 65	$3,632 49	$155,419 69
Game Farms				
Castaic Farm	1,860 00	278 55		2,138 55
Executive	4,640 00	322 71		4,962 71
Fresno Farm	3,334 79	1,511 90	20 00	4,866 69
Game Bird Distribution—Los Serranos		81 43		81 43
Game Bird Distribution—Yountville		88 45		88 45
Game management		38 44		38 44
Los Serranos game farm	10,509 16	6,659 31		17,168 47
Office	1,590 00	199 60		1,789 60
Redding Farm	2,216 66	1,052 33		3,268 99
Sacramento State Farm	2,768 34	996 60	10 00	3,774 94
Visalia State Farm	12 50			12 50
Willows game farm	2,670 48	725 42	10 00	3,405 90
Yountville boarding house	355 48	478 67		834 15
Yountville game farm	15,143 93	10,136 57	12 00	25,292 50
Total Game Farms	$45,101 34	$22,569 98	$52 00	$67,723 32
Licenses				
Executive	$4,640 00	$219 39		$4,859 39
License distribution	21,409 71	113,670 44		135,080 15
Office	2,100 00	1,443 48		3,543 48
Total licenses	$28,149 71	$115,333 31		$143,483 02

STATEMENT OF EXPENDITURES (COMPLETE) BY FUNCTION

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Construction of Fish Screens and Stream Improvements				
Seasonal—First half	$165 00			$165 00
Total Fish Screens	$165 00			$165 00
Containers—Supplementary				
Unallocated supplementary abatements				—2,005 66
Total Fish and Game Support—95th Fiscal Year				$1,541,242 45
Less estimated maintenance deductions				11,523 21
Net total for support—95th Fiscal Year				$1,529,719 24
Additions and betterments			Detail	
Purchase of Land				
Redding (for warehouse, shop, garage, etc.)			3,500 00	$3,500 00
Improvements				
Construction of Ward Cottage—				
Yosemite Hatchery			1,238 22	
Game farms			2,629 80	
Remodel house on Honey Lake Refuge			311 14	
Kern Hatchery well project			620 34	
Total improvements				$4,799 50
Total Additions and Betterments				$8,299 50
Cooperation with Federal Government—				
Pittman-Robertson Act			Detail	
13-D-1			$105 00	
14-D-1			137 57	
11-L-2			3,174 59	
11-L-3			22,050 00	
5-R-1944			3,966 76	
6-R-1944			6,714 02	
15-R-1944			2,093 73	
Total Pittman-Robertson Act				$38,241 67
Less indicated abatement from Federal Government pro rata share, Pittman-Robertson Act				28,659 91
Net Total Pitman-Robertson Act—95th Fiscal Year				$9,581 76
Contributions to Employees Retirement Fund				34,734 47
Grand total Fish and Game Preservation Fund—95th Fiscal Year				$1,582,334 97
TRUST				
Special Deposit Fund				
City of Los Angeles hatchery donation				$60 51

STATEMENT OF REVENUE (COMPLETE)

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)

Revenue for Fish and Game Preservation Fund		
1944 series		
Angling		
Citizen	$297,585 00	
Citizen—Sales refunded to ineligible licensees	—2 00	
Non-resident	1,201 00	
Alien	4,520 00	
Duplicate	93 50	
Total angling		$303,397 50
Hunting		
Citizen	$74 00	
Junior	4 00	
Nonresident	10 00	
Declarant alien	40 00	
Alien	25 00	
Total hunting		153 00
Trapping		
Citizen	$1 00	
Total trapping		1 00
Fish packers and shellfish dealer		
Citizen	$255 00	
Total fish packers and shellfish dealer		255 00
Miscellaneous licenses and tags		
Deer tags	$17 00	
Fish tags	2,540 00	
Game tags	52 05	
Market fisherman	64,640 00	
Fish importers	65 00	
Fish party boat permits	175 00	
Fish breeder	205 00	
Game breeder	2,795 00	
Kelp license	50 00	
Game management—licenses	90 00	
Game management—tags	5 25	
Total 1944 series		$374,440 80
1943 series		
Angling		
Citizen	$585,898 00	
Citizen—Sales refunded to ineligible licensees	—26 00	
Nonresident	7,308 00	
Alien	4,410 00	
Duplicate	864 50	
Total angling		$598,454 50
Hunting		
Citizen	$502,247 00	
Citizen—Sales refunded to ineligible licensees	—8 00	
Junior	26,109 00	
Nonresident	17,650 00	
Declarant alien	2,680 00	
Alien	1,900 00	
Duplicate	975 50	
Total hunting		551,553 50
Commercial hunting club	$750 00	
Total commercial hunting club		750 00
Commercial hunting club operator citizen	$205 00	
Total commercial hunting club operator citizen		205 00
Trapping		
Citizen	$1,521 00	
Sales refunded to ineligible licensees	—1 00	
Alien	32 00	
Total trapping		1,552 00

STATEMENT OF REVENUE (COMPLETE)

For the Period July 1, 1943, to June 30, 1944

(Ninety-fifth Fiscal Year)—Continued

Revenue for Fish and Game Preservation Fund—Continued		
1943 series—Continued		
Fish packer and shellfish dealer		
Citizen	$970 00	
Alien	20 00	
Total fish packer and shellfish dealer		990 00
Miscellaneous licenses and tags		
Deer tags	$147,746 00	
Fish tags	1,540 00	
Game tags	66 81	
Market fisherman	49,740 00	
Fish importers	5 00	
Fish party boat permits	60 00	
Fish breeder	25 00	
Game breeder	300 00	
Kelp license	10 00	
Game management—licenses	20 00	
Game management—tags	4 29	
Antelope permits	2,500 00	
Pheasant tags	121,186 00	
Elk permits	750 00	
Total 1943 series		$1,477,458 10
1942 series		
Angling		
Citizen	$628 00	
Nonresident	—3 00	
Total angling		625 00
Hunting		
Citizen	$13,212 00	
Junior	795 00	
Duplicate	20 50	
Total hunting		14,027 50
Miscellaneous licenses and tags		
Deer tags	$73 00	
Fish tags	20 93	
Game tags		
Total 1942 series		14,746 43
Grand total revenue all years—licenses Fish and Game Preservation Fund		$1,866,645 33
Other revenue		
Court fines	$38,189 36	
Deer meat permits	4,263 00	
Lease of Kelp beds	1,334 50	
Publication sales	53 99	
Fish packers tax	291,229 66	
Kelp tax	1,057 30	
Salmon packers tax	33,933 60	
Miscellaneous revenue	18,826 32	
Total other revenue		388,887 73
Total revenue Ninety-fifth Fiscal Year		$2,255,533 06
Grand total revenue all years Fish and Game Preservation Fund		$2,255,533 06

STATEMENT OF EXPENDITURES (COMPLETE) BY OBJECT

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)

Function	Salaries and wages	Operating expenses	Equipment	Total
Administration				
Seasonal help	$195 08			
Regular help	24,649 52			$24,844 60
Accident and death claims		$4,618 41		4,618 41
Auto		4,593 00	$19 22	4,612 22
Educational		1,200 00	287 20	1,487 20
Freight, cartage and express		684 72		684 72
Legal advertising		552 27		552 27
Library		397 24	327 74	724 98
Light, heat and power		1,805 50		1,805 50
Office		3,196 43	53 47	3,249 90
Photography		6,283 15		6,283 15
Postage		4,985 14		4,985 14
Premium of bonds		54 00		54 00
Printing fish and game magazine		1,965 43		1,965 43
Printing, general		1,081 40		1,081 40
Pro rata, attorney general services		6,000 00		6,000 00
Pro rata, departmental administration		31,001 28		31,001 28
Pro rata, general fiscal administration		15,247 56		15,247 56
Pro rata, Personnel Board services		5,414 31		5,414 31
Rent		12,210 73		12,210 73
Telephone and telegraph		6,041 57		6,041 57
Travel		4,976 09		4,976 09
Total Administration	$24,844 60	$112,308 23	$687 63	$137,840 46
Patrol and Law Enforcement				
Seasonal help	$31,760 43			
Regular help	319,564 47			$351,324 90
Airplane		$965 00		965 00
Auto		60,775 51	$79 69	60,855 20
Boats		9,222 94	267 82	9,490 76
Field		1,508 33	295 11	1,803 44
Freight, cartage, and express		137 08		137 08
Light, heat and power		103 32		103 32
Office		287 44	446 44	733 88
Postage		236 50		236 50
Premium on bonds		1,433 75		1,433 75
Printing		1,421 82		1,421 82
Rent		14,182 43		14,182 43
Telephone and telegraph		8,302 87		8,302 87
Travel		59,142 10		59,142 10
Total Patrol and Law Enforcement	$351,324 90	$157,719 09	$1,089 06	$510,133 05
Marine Fisheries				
Seasonal help	$4,935 94			
Regular help	69,006 89			$73,942 83
Automobile		$3,084 06		3,084 06
Cooperative research		3,808 25	$1,011 34	4,819 59
Field		4,243 83		4,243 83
Fish tags		417 76		417 76
Freight, cartage and express		95 34		95 34
Laboratory		1,442 57	1,523 53	2,966 10
Light, heat and power		589 42		589 42
Office		179 90		179 90
Office			5 01	5 01
Postage		20 00		20 00
Printing		2,233 52		2,233 52
Rent		5,440 82		5,440 82
Telephone and telegraph		158 87		158 87
Travel		10,373 67		10,373 67
Total Marine Fisheries	$73,942 83	$32,088 01	$2,539 88	$108,570 72

STATEMENT OF EXPENDITURES (COMPLETE) BY OBJECT

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Fish Conservation				
Seasonal help	$50,321 17			
Regular help	186,542 96			$236,864 13
Automobile		$21,809 16		21,809 16
Chemicals		887 16		887 16
Eyed eggs		1,568 70		1,568 70
Field		4 08		4 08
Fish foods		98,552 73		98,552 73
Freight, cartage and express		5,007 74		5,007 74
Fuel		6,319 03		6,319 03
Ice		1,574 19		1,574 19
Light, heat and power		6,629 26		6,629 26
Office		588 33		588 33
Operating equipment		25 52	$1,440 59	1,466 11
Operating service		2,450 18		2,450 18
Operating supplies		3,974 87		3,974 87
Postage		508 15		508 15
Printing		258 63		258 63
Rent		19,766 65		19,766 65
Structural maintenance		3,524 80		3,524 80
Telephone and telegraph		1,575 64		1,575 64
Travel		14,744 82		14,744 82
Total Fish Conservation	$236,864 13	$189,769 64	$1,440 59	$428,074 36
Engineering				
Seasonal help	$198 50			
Regular help	21,625 66			$21,824 16
Automobile		$1,872 48		1,872 48
Blueprinting		186 81		186 81
Field		161 43		161 43
Freight, cartage and express		4 59		4 59
Inspection of fish screens		511 44		511 44
Office		92 41	$59 74	152 15
Rent		597 15		597 15
Telephone and telegraph		20 76		20 76
Travel		4,938 05		4,938 05
Total Engineering	$21,824 16	$8,385 12	959 74	$30,269 02
Game Conservation				
Seasonal help	$11,961 31			
Regular	97,138 77			$109,100 08
Airplane rental		$500 00		500 00
Automobile		20,487 66	$117 57	20,605 23
Field		5,421 83	4,884 65	10,306 48
Freight, cartage and express		93 32		93 32
Laboratory		50 77	11 82	62 59
Light, heat and power		1,521 10		1,521 10
Lion bounty		3,530 00		3,530 00
Office		120 99		120 99
Postage		4 00		4 00
Printing		172 25		172 25
Rent		4,234 17		4,234 17
Telephone and telegraph		378 09		378 09
Travel		12,011 09		12,011 09
Total Game Conservation	$109,100 08	$48,525 27	$5,014 04	$162,639 39
Game Farms				
Seasonal help	$25,097 01			
Regular help	29,765 33			$54,862 34
Automobile		$1,307 04		1,307 04
Field		21,389 25		21,389 25
Field additional help			$7,673 83	7,673 83
Freight, cartage and express		121 67		
Light, heat and power		4,505 62		
Office		382 39		
Operating expense		779 00		
Rent		1 25		
Telephone and telegraph		464 62		
Travel		1,577 65		7,832 20
Total Game Farms	$54,862 34	$30,528 49	$7,673 83	$93,064 66

STATEMENT OF EXPENDITURES (COMPLETE) BY OBJECT

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Licenses				
Seasonal help	$458 40			
Regular	28,799 72			$29,258 12
Automobile		$778 50		
Freight, cartage, express		1,135 61		
License commission—cash accounts		61,933 70		
License commission—credit accounts		20,999 52		
License identification buttons		20,914 43		
Light, heat and power		6 41		
Office		289 27		106,057 44
Office			$1 59	1 59
Postage		3,283 96		
Premium on bonds		2,251 62		
Printing		9,301 94		
Rent		549 75		
Telephone and telegraph		346 80		
Travel		1,295 28		17,029 35
Total Licenses	$29,258 12	$123,086 79	$1 59	$152,346 50

For additional expenditures see statement of expenditures by function.

STATEMENT OF EXPENDITURES (COMPLETE) BY FUNCTION

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)

Function	Salaries and wages	Operating expenses	Equipment	Total
Administration				
Education and public information	$3,615 00	$9,310 21	$296 42	$13,221 63
Executive	7,935 02	4,848 93	19 22	12,803 17
Exhibits		112 31		112 31
Fish and game magazine		1,205 38		1,205 38
Library	2,460 00	367 95	318 52	3,146 47
Office	10,834 58	96,463 45	53 47	107,351 50
Total Administration	$24,844 60	$112,308 23	$687 63	$137,840 46
Patrol and Law Enforcement				
Cannery inspection	$10,551 28	$535 58		$11,086 86
Executive	20,687 50	4,504 94	$10 44	25,202 88
Land patrol	266,587 00	113,776 34	451 31	380,814 65
Marine patrol	43,300 24	36,072 03	627 31	79,999 58
Office	10,198 88	1,602 75		11,801 63
Pollution patrol		1,227 45		1,227 45
Total Patrol and Law Enforcement	$351,324 90	$157,719 09	$1,089 06	$510,133 05
Marine Fisheries				
Central Valley Water Project and salmon study	$14,514 60	$9,475 86	$2,221 80	$26,212 26
Executive	8,960 00	1,881 81		10,841 81
Fish cannery auditing		5,187 07		5,187 07
Laboratory	6,201 00	1,637 30	73 90	7,912 20
Mackerel	1,230 00	414 35		1,644 35
Office	10,237 79	747 09	5 01	10,989 89
Sardines	6,883 44	1,549 40		8,432 84
Shark investigation	2,670 00	2,702 26		5,372 26
Shellfish and miscellaneous	3,060 00	415 06		3,475 06
Statistics	20,186 00	8,077 81	239 17	28,502 98
Total Marine Fisheries	$73,942 83	$32,088 01	$2,539 88	$108,570 72
Fish Conservation				
Biological survey	$10,880 53	$1,588 07	$371 70	$12,840 30
Executive	13,110 00	2,151 36		15,261 36
Field supervision	3,465 00	589 34		4,054 34
Fish food unallocated		70,030 37		70,030 37
Fish planting		479 26		479 25
Fish rescue	9,069 00	2,919 82	48 21	12,037 03
Office	9,252 96	724 38		9,977 34
Operating expense unallocated		465 21		465 21
Pollution inspection	1,020 00	217 91		1,237 91
Statistical		903 74		903 74
Structural maintenance		274 45		274 45
Alpine hatchery		25 44		25 44
Arrowhead Lake Egg Collecting Station		27 36		27 36
Basin Creek	6,197 29	2,893 50	36 58	9,127 37
Benbow Dam Experimental Station	1,170 00	173 49	4 76	1,348 25
Black Rock Springs		587 92	8 20	596 12
Bogus Creek Egg Collecting Station		85 00		85 00
Brookdale Hatchery	6,580 16	1,910 66		8,490 82
Burney Creek Hatchery	7,784 82	1,899 20	260 28	9,944 30
Cedar Creek Hatchery		260 00		260 00
Central Valley Hatchery	4,040 64	3,609 97		7,650 61
Claremont Hatchery		3 69		3 69
Copco Egg Collecting Station		85 00		85 00
Coy Flat		73 39		73 39
Fall Creek Hatchery	5,028 64	660 96		5,689 60
Feather River Hatchery	1,570 84	1,353 59		2,924 43
Fillmore Hatchery	19,450 80	12,773 21	267 26	32,491 27
Fishing Creek		150 00		150 00
Hot Creek Hatchery	14,886 24	26,582 73	132 92	41,601 89
Kaweah Hatchery	5,698 51	1,737 39	10 89	7,446 79
Kern Hatchery	3,145 00	1,959 51		5,104 51
Kings River Hatchery	6,249 16	2,486 55		8,735 71
Klamathon Egg Collecting Station		258 12		258 12
Lake Almanor Hatchery	8,049 97	2,347 42	49 15	10,446 54
Madera Hatchery		69 82		69 82
Mt. Shasta Hatchery	46,318 19	14,103 54	2 50	60,424 23
Mt. Tallac Hatchery	2,873 11	2,479 25	17 30	5,369 66
Mt. Whitney Hatchery	22,685 27	19,847 27	22 49	42,555 03
Prairie Creek Hatchery	5,077 98	2,266 48	8 71	7,353 17
Rearing Residence		1 00		1 00
Rush Creek Egg Collecting Station		51 90		51 90
San Lorenzo Egg Collecting Station		215 43		215 43
Sequoia Experimental Station	3,830 00	1,925 78	12 08	5,767 86

STATEMENT OF EXPENDITURES (COMPLETE) BY FUNCTION

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Fish Conservation—Continued				
Shasta River Egg Collecting Station		$586 55		$586 55
Snow Mountain Egg Collecting Station	$3,167 78	668 29		3,836 07
Tahoe Hatchery	8,548 84	3,844 07	$105 71	12,498 62
Upper Truckee Egg Collecting Station		10 00		10 00
Yosemite Hatchery	4,320 24	1,192 68	76 21	5,589 13
Yuba River Hatchery	3,393 16	219 57	5 64	3,618 37
Total Fish Conservation	$236,864 13	$189,769 64	$1,440 59	$428,074 36
Engineering				
Engineering	$12,806 39	$4,374 26	$52 05	$17,232 70
Executive	5,040 00	1,389 16		6,429 16
Inspection fish screen	1,999 03	2,605 73		4,604 76
Office	1,978 74	15 97	7 69	2,002 40
Total Engineering	$21,824 16	$8,385 12	$59 74	$30,269 02
Game Conservation				
Duck rescue	$147 12	$352 93		$500 05
Elk refuge	2,030 00	728 54		2,758 54
Executive	11,292 10	3,389 53		14,681 63
Game management	9,709 33	6,798 08	$615 40	17,122 81
Grey Lodge Refuge	4,686 67	742 22	46 59	5,475 48
Honey Lake Refuge	4,386 00	2,724 62	1,565 42	8,676 04
Imperial Refuge	2,460 00	202 12		2,662 12
Los Banos Refuge	4,750 00	1,922 27	217 30	6,889 57
Office	4,920 56	232 20		5,152 76
Predatory animal lion hunting	5,425 00	6,716 82		12,141 82
Predatory animal trapping	46,001 44	19,263 35	601 74	65,866 53
Research	9,132 98	3,546 52	25 76	12,705 26
Statistics		316 93		316 93
Suisun Refuge	4,158 88	1,373 64	1,941 83	7,474 35
Winter feed and salt for game		215 50		215 50
Total Game Conservation	$109,100 08	$48,525 27	$5,014 04	$162,639 39
Game Farms				
Castaic Farm	$1,815 00	$300 33		$2,115 33
Chino Farm		9 87		9 87
Executive	4,645 00	313 69		4,958 69
Fresno Farm	4,626 18	1,762 58		6,388 76
Game bird district-Los Serranos	1,707 14	104 17		1,811 31
Game bird district—Yountville		111 67		111 67
Game management		24 58		24 58
Los Serranos Game Farm	10,910 61	7,197 59	$35 20	18,143 40
Office	1,825 33			1,825 33
Redding Farm	2,490 14	2,705 20		5,195 34
Sacramento State Farms	3,607 30	1,323 88		4,931 18
Visalia Farm	338 71			338 71
Willows Farm	1,683 01	951 54	211 41	2,845 96
Yountville boarding house	1,045 00	3,160 47		4,205 47
Yountville Game Farm	20,168 92	12,562 92	7,427 22	40,159 06
Total Game Farms	$54,862 34	$30,528 49	$7,673 83	$93,064 66
Licenses				
Executive	$4,880 00	$903 41		$5,783 41
License distribution	22,422 49	120,242 40		142,664 89
Office	1,955 63	1,940 98	$1 59	3,898 20
Total Licenses	$29,258 12	$123,086 79	$1 59	$152,346 50
Construction of Fish Screens and Stream Improvement				
Total Fish Screens	$165 00	$782 61	$15,643 29	$16,590 90
Unallocated support abatements				4,214 84
Special item—Repaired Jenner Jetty				2,500 00
Total allotment for support—Ninety-sixth Fiscal Year				$1,637,814 22
Less estimated maintenance deductions				10,787 60
Net total allotment for support—Ninety-sixth Fiscal Year				$1,627,026 62

STATEMENT OF EXPENDITURES (COMPLETE) BY FUNCTION

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)—Continued

	Detail	Total
Additions and Betterments		
Purchase of land—		
Redding (For warehouse, shop, garage etc.)	$794 00	$794 00
Improvements—		
Building room in tank house and repair cottage on Elk Refuge	208 59	
Cedar Creek Hatchery project	2,159 48	
Construction of rearing ponds—all hatcheries	451 11	
Fern Creek house and garage remodel project	338 31	
Ferry building alterations	130 00	
Fillmore Hatchery levee construction	1,935 00	
Game farms	2,764 04	
Kings River Hatchery repair and foundation replacement project	449 50	
Maintenance and repair of Jenner Jetty—payable from Chapter 1091-43	5,000 00	
Overhauling pump on Elk Refuge	436 23	
Portable housing project Fillmore Hatchery	6,908 37	
Remodel cottages on Honey Lake Refuge	2,012 06	
Remodel house on Honey Lake Refuge	128 70	
Replacing of bridge on Imperial Refuge	136 99	
Tahoe Hatchery water supply project	317 98	$23,376 36
Total Additions and Betterments		$24,170 36
Special item—Cooperation with Federal Government—Pittman-Robertson Act		
14-D-1	$4,833 70	
18-D	729 89	
10-L-4	8,496 09	
10-L-5	7,763 40	
17-L-1	28,443 74	
5-R-1945	3,935 60	
6-R-1945	6,717 79	
15-R-1945	5,136 12	
16-R-1945	6,380 82	
		$72,437 15
Less indirect abatement from Federal Government pro rata share Pittman-Robertson		54,284 44
Net total Pittman-Robertson		$18,152 71
Contributions to Employees Retirement Fund		35,307 98
Grand total Fish and Game Preservation Fund Ninety-sixth Fiscal Year		$1,704,657 67

STATEMENT OF REVENUES (COMPLETE)

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)

Revenue for Fish and Game Preservation Fund:	Detail	Total
1945 series		
Angling		
Nonresident	$1,280 00	
Citizen	316,546 00	
Alien	4,800 00	
Duplicate	169 50	
Total Angling		$322,795 50
Hunting		
Citizen	90 00	
Junior	8 00	
Declarant alien	55 00	
Total Hunting		153 00
Miscellaneous Licenses and Tags		
Deer tags	$20 00	
Fish tags	2,403 00	
Game tags	50 80	
Market fisherman	62,900 00	
Fish importers	60 00	
Fish party boat permits	160 00	
Fish breeder	270 00	
Game management—tags	8 91	
Game breeder	2,620 00	
Kelp license	50 00	
		68,542 71
Total 1945 series		$391,491 21
1944 series		
Angling		
Citizen	$564,853 00	
Nonresident	8,102 00	
Alien	4,960 00	
Duplicate	1,076 50	
Total Angling		578,991 50
Hunting		
Citizen	$551,267 00	
Junior	34,242 00	
Nonresident	21,090 00	
Declarant alien	2,910 00	
Alien	3,250 00	
Duplicate	1,426 50	
Total Hunting		614,185 50
Community Hunting Club		
Citizen	$900 00	
Total Community Hunting Club		900 00
Community Hunting Club Operator		
Citizen	$250 00	
Total Community Hunting Club Operator		250 00
Trapping		
Citizen	$1,592 00	
Alien	38 00	
Total Trapping		1,630 00
Fish Packer and Shellfish Dealer		
Citizen	890 00	
Alien	20 00	
Total Fish Packer and Shellfish Dealer		910 00

STATEMENT OF REVENUES (COMPLETE)

For the Period July 1, 1944, to June 30, 1945

(Ninety-sixth Fiscal Year)—Continued

Revenue for Fish and Game Preservation Fund:		
1944 series—continued		
Miscellaneous Licenses and Tags		
Deer tags	$178,163 00	
Fish tags	1,180 00	
Game tags	50 22	
Market fisherman	43,850 00	
Fish party boat permits	59 00	
Fish breeder control	35 00	
Game breeder	265 00	
Kelp license	30 00	
Game management—licenses	160 00	
Game management—tags	41 49	
Antelope permits	2,500 00	
Pheasant tags	105,811 00	
Deer meat lockers	4,962 00	
Deer meat wardens	618 00	
		337,724 71
Total 1944 series		$1,534,591 71
1943 series		
Angling		
Citizen	$2,138 00	
Nonresident (none)		
Total Angling		$2,138 00
Hunting		
Citizen	$5,081 00	
Junior	450 00	
Duplicate	14 50	
Total Hunting		5,545 50
Miscellaneous Licenses and Tags		
Deer tags	$40 00	
Fish tags	27	
Market fisherman	200 00	
		240 27
Total 1943 series		$7,923 77
Subrevenue		$1,934,006 69
Other Revenue		
Court fines	$38,909 88	
Lease of kelp beds	998 10	
Fish packers tax	339,110 13	
Kelp tax	1,474 74	
Salmon tax	52,799 07	
Miscellaneous revenue	17,297 67	
Sale of boat	10,486 00	
Total Other Revenue		$461,075 59
Grand total, Fish and Game Preservation Fund		$2,395,082 28

STATEMENT OF EXPENDITURES (INCOMPLETE) BY OBJECT
(AS OF DECEMBER 31, 1946)
For the Period July 1, 1945, to June 30, 1946
(Ninety-seventh Fiscal Year)

Function	Salaries and wages	Operating expenses	Equipment	Total
Administration—101				
Seasonal help	$693 48			$693 48
Regular help	34,814 16			34,814 16
Accident and death claims		$10,849 47		10,849 47
Automobile		1,572 04		1,572 04
Educational and public information		2,843 00	$1,503 80	4,346 80
Freight, cartage, express		1,740 20		1,740 20
Legal advertisements		1,952 64		1,952 64
Library		101 17	187 02	288 19
Light, heat and power		1,671 78		1,671 78
Office		8,239 32	608 68	8,848 00
Photo		5,485 12	7 63	5,492 75
Postage		6,712 05		6,712 05
Premium on bonds		30 00		30 00
Printing fish and game magazine (only)		4,127 44		4,127 44
Printing—general		3,519 31		3,519 31
Pro rata attorney general service		6,000 00		6,000 00
Pro rata departmental administration		35,744 50		35,744 50
Pro rata general fiscal administration		21,615 36		21,615 36
Pro rata Personnel Board service		8,832 20		8,832 20
Rent		13,130 28		13,130 28
Telephone and telegraph		7,884 02		7,884 02
Travel		7,412 49		7,412 49
Total Administration—101	$35,507 64	$149,462 39	$2,307 13	$187,277 16
Patrol and Law Enforcement—104				
Seasonal help	$63,195 75			$63,195 75
Regular help	443,732 68			443,732 68
Airplane		$2,217 45	$2,547 13	4,764 58
Automobile		89,341 76	9,217 71	98,559 47
Boats		29,757 09	23,316 57	53,073 66
Field		3,867 95	7,770 24	11,638 19
Freight, cartage and express		212 37		212 37
Light, heat and power		115 56		115 56
Laboratory		00		00
Office		378 15	6 30	384 45
Postage		736 89		736 89
Premium on bonds		2,271 25		2,271 25
Printing		1,971 28		1,971 28
Rent		8,306 67		8,306 67
Telephone and telegraph		10,133 16		10,133 16
Traveling		81,739 69		81,739 69
Total Patrol and Law Enforcement—104	$506,928 43	$231,049 27	$42,857 95	$780,835 65
Marine Fisheries—105				
Seasonal help	$7,129 50			$7,129 50
Regular help	93,208 17			93,208 17
Automobile		$5,602 69	$9 90	5,612 59
Boats			465 00	465 00
Cooperative research		1 09		1 09
Fish cannery auditing		5,306 32		5,306 32
Fish inspecting and fish tagging		51 74		51 74
Fish tags		1,042 55		1,042 55
Freight, cartage and express		117 32		117 32
Laboratory		2,065 36	57 94	2,123 30
Library		133 11	61 84	194 95
Light, heat and power		617 52		617 52
Office		329 48	343 43	672 91
Printing		5,792 90		5,792 90
Rent		5,366 54		5,366 54
Scientific investigations		2,139 47	354 40	2,493 87
Statistics		216 65		216 65
Telephone and telegraph		177 81		177 81
Traveling		14,064 04		14,064 04
Total Marine Fisheries—105	$100,337 67	$43,024 59	$1,292 51	$144,654 77

STATEMENT OF EXPENDITURES (INCOMPLETE) BY OBJECT
(AS OF DECEMBER 31, 1946)
For the Period July 1, 1945, to June 30, 1946
(Ninety-seventh Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Fish Conservation—106				
Seasonal help	$89,873 57			$89,873 57
Regular	227,322 78			227,322 78
Automobile		$30,306 14	$8,645 64	38,951 78
Chemicals		1,131 05		1,131 05
Eyed eggs		3,130 01		3,130 01
Field operating supplies		7,089 32	57 68	7,147 00
Fish foods		100,020 77		100,020 77
Freight, cartage and express		4,716 73		4,716 73
Fuel		4,483 30		4,483 30
Ice		2,655 48		2,655 48
Light, heat and power		7,777 67		7,777 67
Office		586 03	23 50	609 53
Operating equipment		30 90	11,897 05	11,927 95
Operating service		1 24		1 24
Postage		555 64		555 64
Printing		288 21		288 21
Rent		20,540 96		20,540 96
Structural maintenance		6,144 36	894 44	7,038 80
Telephone and telegraph		1,749 88		1,749 88
Travel		18,684 76		18,684 76
Total Fish Conservation—106	$317,196 35	$209,892 45	$21,518 31	$548,607 11
Engineering—107				
Seasonal help	$140 80			$140 80
Regular help	5,495 47			5,495 47
Automobile		$519 61		519 61
Blueprinting		54 28		54 28
Field		14 64		14 64
Inspecting fish screens		65 93		65 93
Office		38 22		38 22
Rent		188 50		188 50
Telephone and telegraph		8 30		8 30
Traveling		971 94		971 94
Total Engineering—107	$5,636 27	$1,861 42		$7,497 69
Game Conservation—108				
Seasonal help	$17,828 18			$17,828 18
Regular help	148,019 15			148,019 15
Automobile		$31,423 44	$5,242 01	36,665 45
Crow bounty		240 15		240 15
Field		22,129 84	6,971 71	29,101 55
Freight, cartage and express		117 90		117 90
Laboratory		657 31	599 69	1,257 00
Light, heat and power		2,456 74		2,456 74
Lion bounty		9,610 00		9,610 00
Office		1,119 20	61 46	1,180 66
Postage		178 20		178 20
Printing		274 31		274 31
Rent		4,256 60		4,256 60
Telephone and telegraph		601 44		601 44
Traveling		18,485 58		18,485 58
Total Game Conservation—108	$165,847 33	$91,550 71	$12,874 87	$270,272 91
Game Farms—109				
Seasonal help	$31,342 75			$31,342 75
Regular	43,762 91			43,762 91
Automobile		2,624 94		2,624 94
Miscellaneous field		8,169 09	$12 20	8,181 29
Freight, cartage and express		107 30		107 30
Game foods		21,554 56		21,554 56
Light, heat and power		4,977 96		4,977 96
Office		17 93		17 93
Postage		33 00		33 00
Printing		39 90		39 90
Rent		11 75		11 75
Telephone and telegraph		939 04		939 04
Traveling		2,086 25		2,086 25
Total Game Farms—109	$75,105 66	$40,561 72	$12 20	$115,679 58

STATEMENT OF EXPENDITURES (INCOMPLETE) BY OBJECT
(AS OF DECEMBER 31, 1946)
For the Period July 1, 1945, to June 30, 1946
(Ninety-seventh Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Licenses—111				
Seasonal help	$583 57			$583 57
Regular help	30,701 50			30,701 50
Automobile		$915 58		915 58
Freight, cartage and express		1,373 42		1,373 42
License indicating buttons		15,483 85		15,483 85
License commission—credit agents		61,573 46		61,573 46
License commission—cash agents		57,337 08		57,337 08
Office		757 20	$823 63	1,580 83
Postage		2,777 40		2,777 40
Premium on bonds		6,538 63		6,538 63
Printing		17,932 37		17,932 37
Rent		556 50		556 50
Telephone and telegraph		268 85		268 85
Traveling		1,179 63		1,179 63
Total Licenses—111	$31,285 07	$166,693 97	$823 63	$198,802 67
Construction of Fish Screens and Stream Improvements				
Total Fish Screens	267 38	24,587 79		24,855 17
Total Fish and Game Support—97th Fiscal Year				$2,278,482 71
Less estimated maintenance deductions				12,111 89
Net total Fish and Game Support—97th Fiscal Year				$2,266,370 82
Special item—Claim of Secretary of State Board of Control—Chapter 1527-45				978 27
Total Operating Expenditures—97th Fiscal Year				$2,267,349 09

STATEMENT OF EXPENDITURES (INCOMPLETE) BY OBJECT
(AS OF DECEMBER 31, 1946)
For the Period July 1, 1945, to June 30, 1946
(Ninety-seventh Fiscal Year)—Continued

	Detail	Total
Additions and Betterments		
Purchase of land		
Buchner Field, City of Yreka	$813 00	$813 00
Improvements		
Alteration and modernization of hatchery buildings	1,354 46	
Construction of rearing ponds all hatcheries	948 38	
Engineering projects	10,000 00	
Experiments, electrical and mechanical fish screens	186 88	
Fern Creek house and garden remodeling project	148 95	
Game farms	868 33	
Honey Lake Refuge	2,546 96	
Improvement county public shooting grounds	5,000 00	
Madeline Plains Waterfowl Mgnt.		
Preliminary engineering service		
Tulelake dam	70 00	
Redding Game Farm—construction of house and garden	9,225 00	
Redding warehouse	4,966 17	
Replacement of hatchery pipe lines	666 89	
Tahoe Hatchery improvement	1,224 75	
Waddell Creek Dam repair project	122 54	
Yountville game farms holding pens	6,611 48	
Repairs, restoration and maintenance of Jenner		
Jetty on Russian River, Chapter 1194-45	20,000 00	
		63,940 79
Total Additional and Betterments—97th Fiscal Year		$64,753 79
Special Item—Cooperation with Federal Government		
Pittman-Robertson Act		
Beaver transplanting, statewide project 18-D	$3,583 79	
Madeline Plains Waterfowl Mgnt.		
Area Project 17 L-2	11,069 46	
Project 17 L-3	2,960 00	
Project 15-R	2,338 06	
Project 16-R	7,702 42	
Project 19-R	6,522 61	
Project 20-R	1,393 24	
Project 22-R	3,654 07	
Project 24-R-1	907 87	
Madeline Plains Tulelake Dam	1,566 41	
		41,697 93
Less indirect abatement from federal government, pro rata share Pittman-Robertson Act		28,381 55
Net total, Pittman-Robertson Act		$13,316 38
Contributions to Employees Retirement Fund		111,458 07
Grand total Fish and Game Preservation, 97th Fiscal Year		$2,456,877 33

STATEMENT OF EXPENDITURES (INCOMPLETE) BY FUNCTION
(AS OF DECEMBER 31, 1946)
For the Period July 1, 1945, to June 30, 1946
(Ninety-seventh Fiscal Year)

Function	Salaries and wages	Operating expenses	Equipment	Total
Administration—101				
Education and public information	$5,834 10	$7,727 21	$1,511 43	$15,072 74
Executive	10,250 00	7,419 80		17,669 80
Exhibits		122 52		122 52
Fish and game magazine		2,564 01		2,564 01
Library	2,354 29	1,390 12	139 02	3,883 43
Office	17,069 25	130,223 73	656 68	147,949 66
Unallocated		15 00		15 00
Total Administration—101	$35,507 64	$149,462 39	$2,307 13	$187,277 16
Patrol and Law Enforcement—104				
Airplane		$2,246 31	$9,722 13	$11,968 44
Cannery inspection	$20,649 47	217 71		20,867 18
Executive	29,453 46	4,885 26	7,175 00	41,513 72
Land patrol	369,024 20	157,636 59	2,375 02	529,035 81
Marine patrol	74,525 15	62,271 03	23,585 80	160,381 98
Office	13,276 15	2,696 84		15,972 99
Pollution patrol		726 77		726 77
Unallocated		368 76		368 76
Total Patrol and Law Enforcement—104	$506,928 43	$231,049 27	$42,857 95	$780,835 65
Marine Fisheries—105				
Central Valley Water Project and salmon study	$19,944 30	$14,283 71	$873 81	$35,101 82
Executive	11,602 97	2,745 76		14,348 73
Fish cannery auditing		6,063 43		6,063 43
Laboratory	4,891 86	3,731 24	13 10	8,636 20
Library		28 74	33	29 07
Mackerel	3,909 83	137 41		4,047 24
Office	11,123 79	1,511 40	347 12	12,982 31
Sardines	12,238 01	2,202 26		14,440 27
Shark investigation	5,315 97	1,982 48	18 45	7,316 90
Shellfish and miscellaneous	3,790 00	930 21	2 10	4,722 31
Statistics	27,145 13	9,362 95	37 60	36,545 68
Tuna	375 81			375 81
Unallocated		45 00		45 00
Total Marine Fisheries—105	$100,337 67	$43,024 59	$1,292 51	$144,654 77
Fish Conservation—106				
Biological survey	$25,027 95	$6,087 70	$1,554 82	$32,670 47
Executive	15,345 00	2,203 51	12 81	17,561 32
Field inspection		—3 53		—3 53
Field supervision	9,925 00	1,933 22	8,666 87	20,525 09
Fish foods unallocated		43,804 41		43,804 41
Fish planting		1,881 52		1,881 52
Fish rescue	12,809 75	3,861 14		16,670 89
Fish screens		929 26		929 26
Office	8,929 74	369 09	180 35	9,479 18
Operating expenses unallocated		638 44		638 44
Pollution inspection	1,684 00	158 43		1,842 43
Statistical		255 94		255 94
Stream improvement	830 00	446 99		1,276 99
Structural maintenance		103 29	1,545 71	1,649 00
Unallocated		9,111 70		9,111 70
Unallocated (automobile, gas and oil)		130 86		130 86
Alpine Hatchery		20 84		20 84
Arrowhead Lake Hatchery		11 25		11 25
Basin Creek Hatchery	5,863 10	1,702 54		7,565 64
Benbow Dam	1,491 00	83 38		1,574 38
Black Rock Springs		306 54	19 20	325 74
Bogus Creek Egg Collecting Station		85 00		85 00
Brookdale Hatchery	7,457 03	2,406 35	202 08	10,065 46
Burney Creek Hatchery	8,760 20	2,042 09	161 25	10,963 54
Central Valley	8,971 57	3,751 85	200 43	12,923 85
Copco Egg Collecting Station		85 00		85 00
Coy Flat	495 02	146 06	9 49	650 57

STATEMENT OF EXPENDITURES (INCOMPLETE) BY FUNCTION
(AS OF DECEMBER 31, 1946)
For the Period July 1, 1945, to June 30, 1946
(Ninety-seventh Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Fish Conservation—106—Continued				
Crystal Lake		$2 00		$2 00
Experimental Hatchery	$450 00			450 00
Fall Creek Hatchery	6,569 24	$1,170 59	$26 09	7,765 92
Feather River Hatchery	3,800 32	939 19	384 00	5,123 51
Fillmore Hatchery	23,353 08	22,869 22	1,253 69	47,475 99
Fishing Creek		31 25		31 25
Hot Creek Hatchery	21,986 66	30,945 74	106 15	53,038 55
Huntington Lake	305 64	489 48		795 12
Kaweah Hatchery	6,726 32	1,914 22	880 35	9,520 89
Kern Hatchery	4,546 66	2,014 11	157 43	6,718 20
Kings River Hatchery	7,057 22	3,376 20	975 57	11,408 99
Klamathon		1,333 91		1,333 91
Lake Almanor Hatchery	9,973 00	2,732 43	231 62	12,937 05
Madera Hatchery		59 28		59 28
Mt. Shasta Hatchery	52,606 48	17,944 37	327 96	70,878 81
Mt. Tallac Hatchery	4,071 45	2,618 49	262 81	6,952 75
Mt. Whitney Hatchery	25,830 78	23,349 12	957 75	50,137 65
Mt. Whittier Hatchery	360 00			360 00
Owens Park		43 99	505 88	549 87
Potter Valley	1,050 00			1,050 00
Prairie Creek Hatchery	7,110 17	2,684 12	2,308 95	12,103 24
Rush Creek Hatchery	900 00	94 80		994 80
San Gabriel Experimental Station	300 00	349 97	40 51	690 48
San Lorenzo Hatchery		72 89		72 89
Sequoia Hatchery	4,235 41	2,201 93	55 51	6,492 85
Shasta River Hatchery	303 50	87 00		390 50
Snow Mountain		534 00	9 74	543 74
Tahoe Hatchery	11,747 64	4,276 36	387 91	16,411 91
Tuolumne	580 00			580 00
Upper Truckee Egg Collecting Station		10 00		10 00
Whittier Hatchery	5,070 00	1,433 55	44 00	6,547 55
Yosemite Hatchery	7,025 03	1,215 00	33 75	8,273 78
Yuba River Hatchery	3,648 39	242 31	15 63	3,906 33
Unallocated		2,304 06		2,304 06
Total Fish Conservation—105	$317,196 35	$209,892 45	$21,518 31	$548,607 11
Engineering—107				
Engineering	$2,665 15	$778 27		$3,443 42
Executive	2,231 12	254 06		2,485 18
Inspection of fish screens	360 00	821 99		1,181 99
Office	380 00	7 10		387 10
Total Engineering—107	$5,636 27	$1,861 42		$7,497 69
Game Conservation—108				
Elk Refuge	$2,940 00	$808 19	$13 15	$3,761 34
Executive	14,365 00	3,183 54		17,548 54
Game management	28,273 38	18,494 58	306 12	47,074 08
Grey Lodge Refuge	5,697 36	1,155 25	625 67	7,478 28
Honey Lake Refuge	7,994 95	4,818 17	3,876 89	16,690 01
Imperial Refuge	3,807 33	6,197 17		10,004 50
Imperial Valley Public Shooting Grounds		825 00		825 00
Los Banos Refuge	5,225 00	2,304 60	571 37	8,100 97
Office	6,588 95	443 50	39 07	7,071 52
Predatory animal—lion hunting	8,047 10	13,057 52		21,104 62
Predatory animal trapping	56,219 23	29,791 00	3,341 05	89,351 28
Predatory birds		240 15		240 15
Research	20,250 04	6,685 80	596 00	27,531 84
Riverside		10 65		10 65
Statistics		852 18		852 18
Suisun Refuge	6,438 99	1,368 76	1,530 37	9,338 12
Unallocated		736 91	1,975 18	2,712 09
Unallocated (automobile, gas and oil)		136 09		136 09
Winter feeding and salt for game		441 65		441 65
Total Game Conservation—108	$165,847 33	$91,550 71	$12,874 87	$270,272 91

STATEMENT OF EXPENDITURES (INCOMPLETE) BY FUNCTION
(AS OF DECEMBER 31, 1946)
For the Period July 1, 1945, to June 30, 1946
(Ninety-seventh Fiscal Year)—Continued

Function	Salaries and wages	Operating expenses	Equipment	Total
Game Farms—109				
Castaic Farm	$2,720 88	$132 10		$2,852 98
Chino Game Farm	104 39	160 73		265 12
Executive	4,451 75	151 44		4,603 19
Fresno Game Farm	5,688 90	2,220 99		7,909 89
Game bird district—Los Serranos	1,725 17	60 78	$5 25	1,791 20
Game bird district—Yountville	1,910 39	226 43		2,136 82
Game management	690 00	12 22		702 22
Los Serranos Game Farm	15,675 78	10,792 85		26,468 63
Office	2,210 00	371 14		2,581 14
Redding Game Farm	4,040 59	1,518 12		5,558 71
Sacramento Game Farm	4,442 58	930 19		5,372 77
Valley Center Farm	640 00	43 86	6 95	690 81
Willows Game Farm	3,722 92	911 92		4,634 84
Yountville boarding house	3,485 15	4,168 06		7,653 21
Yountville Game Farm	23,597 16	18,860 89		42,458 05
Total Game Farms—109	$75,105 66	$40,561 72	$12 20	$115,679 58
Licenses—111				
Executive	$7,640 00	$1,304 74		$8,944 74
License distribution	21,630 07	164,661 21	$821 06	187,112 34
Office	2,015 00	681 51	2 57	2,699 08
Unallocated (automobile, gas and oil)		46 51		46 51
Total Licenses—111	$31,285 07	$166,693 97	$823 63	$198,802 67

For additional expenditures see Statement of Expenditures by Object.

STATEMENT OF REVENUE (INCOMPLETE) (AS OF DECEMBER 31, 1946)

For the Period July 1, 1945, to June 30, 1946

(Ninety-seventh Fiscal Year)

Revenue for Fish and Game Preservation Fund:		
1946 series—		
Angling		
Citizen	$737,079 00	
Nonresident	8,928 00	
Alien	5,950 00	
Duplicate	237 00	
Total Angling		$752,194 00
Hunting		
Citizen	$40 00	
Junior	2 00	
Declarant alien	10 00	
Total Hunting		52 00
Fish Packer and Wholesale Shellfish Dealer		
Citizen	$75 00	
Alien	20 00	
Total fish packer and wholesale shellfish dealer		95 00
Miscellaneous Licenses and Tags		
Deer tags	$7 00	
Fish tags	2,205 00	
Game tags	98 85	
Market fisherman	73,970 00	
Fish importers	45 00	
Fish party boat permits	384 00	
Fish breeder	350 00	
Game breeder	2,675 00	
Kelp license	40 00	
Game management area licenses	100 00	
Game management area tags	84	
Total 1946 series		$832,216 69
1945 series—		
Angling		
Citizen	$773,084 00	
Nonresident	12,571 00	
Alien	5,600 00	
Duplicate	1,582 50	
Total Angling		$792,837 50
Hunting		
Archery-Citizen	$132 00	
Citizen	677,570 00	
Junior	36,994 00	
Nonresident	38,780 00	
Declarant alien	2,775 00	
Alien	3,300 00	
Duplicate	1,540 00	
Total Hunting		761,091 00
Community Hunt Club		
Citizen	$800 00	
Total Community Hunt Club		800 00
Community Hunt Club Operation		
Citizen	$240 00	
Total Community Hunt Club Operation		240 00
Trapping		
Citizen	$1,753 00	
Alien	20 00	
Total Trapping		1,783 00
Fish Packer and Shellfish Dealer		
Citizen	$1,440 00	
Alien	20 00	
Total Fish Packer and Shellfish Dealer		1,460 00

STATEMENT OF REVENUE (INCOMPLETE) (AS OF DECEMBER 31, 1946)

For the Period July 1, 1945, to June 30, 1946

(Ninety-seventh Fiscal Year)—Continued

Revenue for Fish and Game Preservation Fund:		
1945 series—Continued		
Miscellaneous Licenses and Tags		
Archery Deer tags	$31 00	
Deer tags	214,619 00	
Fish tags	2,309 00	
Game tags	82 61	
Market fisherman	54,060 00	
Fish importers	5 00	
Fish party boat permits	152 00	
Fish breeder	50 00	
Game breeder	140 00	
Kelp license	110 00	
Game management area licenses	40 00	
Game management area tags	24	
Antelope permits	2,500 00	
Deer meat wardens	439 00	
Deer meat lockers	7,397 00	281,934 85
Total 1945 series		$1,840,146 35
1944 series—		
Angling		
Alien		
Citizen	$1,454 00	
Duplicate	4 00	
Nonresident	—6 00	
Total Angling		$1,452 00
Hunting		
Citizen	$11,353 00	
Junior	770 00	
Nonresident	90 00	
Declarant alien	20 00	
Duplicate	62 50	
Total Hunting		12,295 50
Miscellaneous Licenses and Tags		
Deer tags	$70 00	
Fish tags	28	
Pheasant tags	112 00	
Deer meat lockers	15 00	197 28
Total 1944 series		$13,944 78
Subrevenue		$2,686,307 82
Other Revenue		
Court fines	$60,042 95	
Lease of Kelp beds	1,334 50	
Fish packers tax	266,146 51	
Kelp tax revenue	2,560 58	
Salmon packers tax	61,541 65	
Miscellaneous revenue	10,142 10	
Interest on survey money investment fund	1,384 86	
Sale of boat	68,043 86	
Total Other Revenue		471,197 01
Grand total—Fish and Game Preservation Fund		$3,157,504 83

ARRESTS, FINES AND SEIZURES

1. Total Arrests Over 43 Years ---- 96
2. Recapitulation, Arrests and Convictions ---- 96
3. Seizure of Fish and Game (Fish) ---- 97
4. Seizure of Fish and Game (Game) ---- 98
5. Fish Cases ---- 99
6. Game Cases ---- 100

TOTAL ARRESTS FOR PERIOD OF 43 YEARS

1902-1904	550	1924-1926	3,207
1904-1906	774	1926-1928	4,390
1906-1908	1,192	1928-1930	5,388
1908-1910	1,771	1930-1932	5,237
1910-1912	2,063	1932-1934	3,795
1912-1914	1,993	1934-1936	4,535
1914-1916	2,087	1936-1938	6,382
1916-1918	1,797	1938-1940	7,444
1918-1920	1,891	1940-1942	7,262
1920-1922	2,258	1942-1944	4,298
1922-1924	2,715	1944-1946	5,902

ARRESTS AND CONVICTIONS—RECAPITULATION

	Number of arrests	*Fines imposed*	*Jail sentences (days)*
Fish cases 1944-1945	1,073	$31,582 50	36
Game cases 1944-1945	974	49,767 00	83½ and 6 months
Totals 1944-1945	2,047	$81,349 50	119½ days and 6 months
Fish cases 1945-1946	2,023	63,493 50	250
Game cases 1945-1946	1,327	65,184 50	64
Totals 1945-1946	3,350	$128,678 00	314
Recapitulation:			
1944-1945	2,047	81,349 50	119½ and 6 months
1945-1946	3,550	128,678 00	314
Totals	5,597	$210,027 50	433½ and 6 months

SEIZURES OF FISH AND GAME

Fish	*July 1, 1944 to June 30, 1945*	*July 1, 1945 to June 30, 1946*	*Total*
Abalones	1,896	3,681	5,577
Abalones, pounds	--	20	20
Bass, black	68	253	321
Bass, pounds	--	41	41
Bass, striped	21	325	346
Bass, striped, pounds	77	--	77
Bass, pounds	1,506	61	1,567
Carp, pounds	--	40	40
Clams	3,374	2,028	5,402
Clams, pismo	19	--	19
Clams, cockles	462	--	462
Catfish	--	15	15
Catfish, pounds	699	590	1,289
Crabs	--	557	557
Crappie	43	23	66
Devilfish, pounds	--	25	25
Elops Affinis	--	1	1
Fish trap	18	--	18
Frogs	--	54	54
Gaff hooks	--	2	2
Halibut, pounds	70	60	130
Kelp and rock bass	--	22	22
Lobster, pounds	1,000	200	1,200
Lobster traps	174	57	231
Lobster receiver	1	--	1
Lobster spiney	--	519	519
Lobster spiney sacks	--	14	14
Lobsters	64	234	298
Mussels, pounds	--	75	75
Perch	--	10	10
Perch, saltwater, pounds	50	--	50
Salmon	63	90	153
Salmon, chinook	21	--	21
Salmon, pounds	--	1,940	1,940
Salmon, king	26	--	26
Salmon, silver, pounds	45	--	45
Shad, pounds	102	--	102
Spear	--	2	2
Spotfin, croaker, pounds	--	360	360
Sturgeon	--	4	4
Sunfish	260	471	731
Sunfish, bluegill	35	--	35
Sunfish, pounds	--	9	9
Trammel nets	--	--	2
Trout, pounds	25	148	173
Trout, steelhead	21	--	21
Trout, steelhead, pounds	1	--	1
Trout, rainbow	1,669	--	1,669
Trout, rainbow, pounds	10	--	10
Trout	949	1,068	2,017
White sea bass, pounds	5,537	--	5,537

SEIZURES OF FISH AND GAME—Continued

Game	*July 1, 1944 to June 30, 1945*	*July 1, 1945 to June 30, 1946*	*Total*
Deer	95	79	174
Deer meat, pounds	809	1,635	2,444
Deer meat canned, jars	10	8	18
Doves	561	837	1,398
Ducks	897	298	1,195
Ducks, teal	2	---	2
Florida Gallinule	--	1	1
Geese	73	43	116
Grebe	--	1	1
Killdeer	2	---	2
Meadowlark	--	2	2
Pheasants	65	33	98
Pheasants hen	75	76	151
Pheasants male	229	94	323
Pigeons	3	25	28
Quail	3	120	123
Quail, valley	20	---	20
Rabbits	3	90	93
Rabbits, cottontail	26	---	26
Robins	--	13	13
Squirrel, gray	2	---	2
Sagehens	6	---	6
Shorebirds	3	---	3
Swans	9	3	12
Wood ducks	3	---	3
Wilson snipe	--	1	1

FISH CASES

Offense	July 1, 1944, to June 30, 1945			July 1, 1945, to June 30, 1946		
	Arrests	Fines	Jail	Arrests	Fines	Jail
Abalones: Undersize, over limit, out of shell, no license, closed season, remove from shell below high tide, fail to show license on demand, no commercial license	211	$5,280 00		442	$14,114 50	
Angling: No license, closed season, closed area, within 150 feet of dam, not holding rod, false statement in securing license, set lines, after sundown, two poles, fish gaff 300 feet of stream, fishing in fish ladder, closed waters, lending license to another, illegally taken fish, using trout roe for bait, back dating angling license, operating set line	250	5,472 50	1	538	9,710 00	
Barracuda: Overlimit, undersize, no license	1	50 00		1	30 00	
Bass: Underize, using two rods, after sundown, night fishing, closed season, no license, two lines, overlimit, possession for sale, failure to return bass to water taken in shad net, buying striped bass	116	3,121 00		293	7,707 50	35
Bass, black: No license	30	335 00	10	3	75 00	
Catfish: Selling, undersize, closed season, use of net to take catfish, closed waters	8	702 50		24	787 00	
Clams: Undersize, clam forks in preserve, take clams in preserve, out of shell, overlimit, no license, closed season	85	2,289 00	25	116	3,281 50	
Commercial: Operating net and taking tuna in closed season, gill net in closed waters, no license, failure to give fishermen copy at delivery, operating round haul net, failure to keep record of fresh fish purchased and from whom	97	4,870 00		151	11,410 00	90
Crabs: Undersize, closed season, overlimit	7	200 00		31	1,720 00	
Crappie: Selling	1	25 00				
Frogs: Overlimit, closed season	1	25 00		6	90 00	
Lobsters: Closed season, undersize, overlimit	14	600 00		31	1,488 00	
Pollution	6	750 00		18	1,275 00	
Salmon: Undersize, taken illegally, other than angling, at night, at fish screen, no license, spearing, night spearing	87	2,592 50		124	4,480 00	105
Spearing: Spearing in prohibited area, 300 feet of stream, using gaff hook	25	830 00				
Sturgeon: Possession	1	10 00		2	50 00	
Sunfish: No license, closed season, overlimit	35	780 00		9	192 50	
Trout: Overlimit, closed area, not using hook and line, sale, more than one pole, closed season	99	2,995 00		233	7,102 50	20
Taking marine life within marine refuge				1	5 00	
Totals	1,074	$30,927 50	36	2,023	$63,518 50	250

GAME CASES

Offense	July 1, 1944, to June 30, 1945			July 1, 1945, to June 30, 1946		
	Arrests	Fines	Jail	Arrests	Fines	Jail
Antelope: Closed season				5	$475 00	
Deer: Night hunting, refuge, transfer deer tags, forked horn, overlimit, closed season, doe, no tags, failure to have deer tag validated, spike buck, fawn, altering deer tag, spotlight, early and late shooting	266	$19,512 50	6 mo.	266	19,362 00	64
Deer Meat, Closed season, unstamped, no permit, illegally taken	44	2,822 50	71	89	6,070 00	
Doves: Closed season, shooting from auto, no license, overlimit, unplugged gun	89	3,275 00		106	3,925 00	
Ducks: Closed season, early and late shooting, overlimit, no license, unplugged gun, failure to show game on demand	161	5,452 50		254	9,018 00	
Failure to show license on demand	1	10 00				
Failure to declare out of state game	3	125 00				
Failure to make report fur sales	1	10 00				
Firearms in refuge, shooting from highway	44	1,390 00		21	490 00	
Florida Gallinule				1	50 00	
Geese: Overlimit, unplugged gun, refuge, no license	8	595 00		25	1,345 00	
Grebe: Possession				4	115 00	
Grouse	1	35 00		1	50 00	
Hunting: No license, failure to show license on demand, transfer of license, hunting in refuge, falsifying in order to secure citizen's license, night, use license of another, spotlighting, refuse to show license on demand	50	1,072 50		146	3,358 50	
Jacksnipe				3	75 00	
Killdeer				1	25 00	
Meadowlark	3	75 00		1	35 00	
Nongame birds	3	75 00		5	80 00	
Pheasants: Closed season, hen, no license, set lines, overlimit	185	11,360 00		198	13,475 00	
Pigeons: Closed season, overlimit	13	440 00		7	113 00	
Quail: Closed season, no license	20	872 00		57	1,504 50	
Rabbits: Closed season, no license	20	440 00	12½	103	2,707 00	
Robins and Flickers				8	175 00	
Sagehens: Closed season	3	125 00		1	50 00	
Seagull: Possession	1	25 00				
Shooting from automobile	9	135 00				
Shooting from power boat	26	740 00				
Shorebirds	1	35 00		5	160 00	
Squirrels	4	125 00		3	110 00	
Swans	13	680 00		8	425 00	
Taking birds with traps	1	25 00				
Trapping: For profit, no license	1	50 00		5	65 00	
Trespassing				2	25 00	
Totals	971	$49,502 50		1,325	$63,283 00	

MARINE FISHERIES STATISTICS

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TABLE I

California Fisheries Production

	1944	*1945*	*Total*
Total landings, pounds	1,458,942,000	1,216,851,000	2,675,793,000
Cases of fish canned	7,738,949	8,346,210	16,085,159
Tons of fish meal produced	107,132	78,653	185,785
Gallons of fish oil produced	18,269,785	12,062,111	30,331,896
Gallons of liver oil produced	414,874	203,815	618,689
Value of canned and processed fishery products	$79,074,776	$79,755,151	$158,829,927

TABLE II

Pounds and Value of Commercial Fish Landings in California

	1944		*1945*	
Species	*Pounds*	*Value*	*Pounds*	*Value*
Sardine	1,147,208,000	$12,716,000	845,063,000	$9,407,000
Yellowfin Tuna	63,144,000	6,269,000	87,448,000	8,717,000
Albacore	20,969,000	3,484,000	21,836,000	4,256,000
Skipjack	30,037,000	2,694,000	33,348,000	2,982,000
Salmon	10,286,000	1,665,000	13,381,000	2,228,000
Bluefin Tuna	20,344,000	1,939,000	20,594,000	2,030,000
Pismo Clam	11,754,000	317,000	53,440,000	1,433,000
Pacific Mackerel	83,657,000	1,707,000	53,717,000	1,119,000
Shark	2,613,000	757,000	2,438,000	1,103,000
Rockfish	6,421,000	287,000	13,586,000	637,000
Crab	2,935,000	428,000	4,346,000	521,000
Sablefish	4,116,000	374,000	6,259,000	519,000
Barracuda	3,648,000	470,000	3,873,000	485,000
Squid	10,937,000	299,000	15,226,000	426,000
Sole	4,700,000	303,000	7,755,000	350,000
Spiny Lobster	920,000	252,000	1,272,000	302,000
Yellowtail	2,957,000	234,000	3,534,000	292,000
Abalone	1,630,000	145,000	2,447,000	280,000
California Halibut	1,492,000	286,000	1,742,000	256,000
Bonito	819,000	69,000	2,714,000	197,000
Smelt	1,541,000	108,000	2,370,000	156,000
Horse Mackerel	12,777,000	229,000	9,033,000	145,000
Broadbill Swordfish	749,000	226,000	363,000	110,000
Catfish	340,000	80,000	425,000	103,000
Cabrilla	209,000	34,000	579,000	83,000
Shad	2,689,000	121,000	1,484,000	72,000
White Sea-bass	394,000	56,000	527,000	69,000
Pacific Cultus	746,000	65,000	759,000	67,000
Northern Halibut	244,000	44,000	296,000	50,000
All other	8,675,000	471,000	6,996,000	435,000
Totals	1,458,942,000	$36,129,000	1,216,851,000	$38,830,000

TABLE III

Nationality of Commercial Fishermen

Nativity	*1944-45*	*1945-46*
United States	6,836	7,742
Italy	1,400	1,412
Jugoslavia	896	810
Norway	460	454
Portugal	348	371
Great Britain	211	231
Sweden	107	101
Mexico	74	78
Spain	63	67
Denmark	62	62
Germany	55	57
Finland	52	60
Russia	52	53
Greece	48	49
Austria	44	40
France	27	22
Netherlands	22	22
All others	114	116
Totals	10,871	11,747

TABLE IV

Residence of Licensed Commercial Fishermen

Region of Residence	*1944-45*	*1945-46*
Eureka	365	628
Sacramento	501	559
San Francisco	1,469	1,484
Monterey	1,007	1,074
Santa Barbara	347	441
Los Angeles	4,978	4,863
San Diego	1,648	2,023
Alaska, Washington, Oregon	522	646
Mexico	34	29
Totals	10,871	11,747

TABLE V

Sardines (Seasonal Record)

	1944-45	*1945-46*
Total tons landed	548,415	396,090
Tons received for canning	265,367	257,997
Total cases all sized cans packed	3,668,471	3,761,306
Number of reduction permits issued	78	85
Permit tonnage granted	390,000	394,995
Number of tons used under permit	277,098	137,867
Tons of sardine meal produced	83,973	56,543
Gallons of sardine oil produced	17,702,612	11,231,584

TABLE VI

Sardine Case Pack by Size of Can

Size of Can	*1944*	*1945*
No. 10, 6's	71,002	70,310
1-lb. oval	1,485,811	1,211,203
1-lb. tall	2,052,469	2,431,521
10½-oz. E.O.	9,003	28,992
½-lb. sq.	25,578	78,600
½-lb. 96's	59,547	50,634
½-lb. fillet	20,584	10,075
5-oz. 100's	374	--
¼-lb. sq. 100's	10,292	3,089
Totals	3,734,660	3,884,424

TABLE VII

Tuna Catch in Pounds

Species	*1944*	*1945*
Yellowfin	63,144,000	87,448,000
Skipjack	30,037,000	33,348,000
Albacore	20,969,000	21,836,000
Bluefin	20,344,000	20,594,000
Bonito	819,000	2,714,000
Totals	135,313,000	165,940,000

TABLE VIII

Number of Cases of Tuna Packed

	1944					1945			
	Cases by Size of Can					Cases by Size of Can			
	1-lb.	*½-lb.*	*¼-lb*	*¼-lb.**	*Total*	*1-lb.*	*½-lb.*	*¼-lb.*	*Total*
Albacore	14,973	420,140	10	----	435,123	----	480,615	----	480,615
Bonito	----	8,490	----	----	8,490	321	49,495	----	49,816
Bluefin	6,070	367,934	----	----	374,004	7,269	290,589	----	297,858
Skipjack	3,409	360,448	----	----	363,857	1,512	545,525	1,137	548,174
Yellowfin	74,993	744,976	4	7,510	827,483	81,202	1,415,091	1,698	1,497,991
Tuna, grated and flakes	11,876	729,915	16,009	7,207	765,007	8,821	539,633	----	548,454
Tuna, tonno style	----	15,365	----	----	15,365	----	16,198	----	16,198
Totals	111,321	2,647,268	16,023	14,717	2,789,329	99,125	3,337,146	2,835	3,439,106

* One hundred cans to the case. All others forty-eight.

TABLE IX

Mackerel Catch in Pounds

Species	*1944-45*	*1945-46*
Pacific Mackerel	80,785,000	52,003,000
Horse Mackerel	13,743,000	9,270,000
Totals	94,528,000	61,273,000

TABLE X

Number of Cases of Mackerel Packed

Size of can	*1944*	*1945*
1-lb.	973,098	587,959
½-lb.	13,324	34
Miscellaneous sizes	----	1,624
Total	986,422	589,617

CENTRAL VALLEY SALMON STUDIES

TABLE XI

Counts of Adult Salmon

	1943	*1944*	*1945*
San Joaquin River (at Mendota), Spring run	*	5,000	56,000
Tuolumne River (at Modesto), fall run	*	130,000	*
Mokelumne River (at Woodbridge), fall run	*	*	6,500
American River	7,000**	30,000	38,000

* No count made.
** Incomplete but probably represents over two-thirds of total.

TABLE XII

Shark Livers Processed by California Plants

Quantities in Pounds

Taken in California waters	*July, 1944 June, 1945*	*July, 1945 June, 1946*	*Changes*	
Soupfin	307,216	192,247	minus	114,969
Dogfish	58,472	51,247	minus	7,225
Mixed Species	118,838	190,560	plus	71,722
Total	484,526	434,054	minus	50,472
Taken in Washington and Oregon waters				
Soupfin	94,362	15,623	minus	78,739
Dogfish	1,117,668	814,359	minus	303,309
Mixed Species	7,796	6,656	minus	1,140
Total	1,219,826	836,638	minus	383,188
Taken in Latin American waters				
Mixed Species	1,104,934	1,003,806	minus	101,128
Taken on Atlantic Coast				
Mixed Species	11,502	17,026	plus	5,524
GRAND TOTAL	2,820,788	2,291,524	minus	529,264

TABLE XIII

Catches of Bottom Fish, in Pounds

Flatfish	*1944*	*1945*
Sole	4,700,000	7,755,000
Sand Dab	550,000	590,000
Starry Flounder	365,000	340,000
Turbot	75,000	160,000
Rockfish (Rock Cod)	6,421,000	13,586,000
Sablefish (Black Cod)	4,116,000	6,259,000
Cultus (Ling Cod)	746,000	759,000

FISH DISTRIBUTION AND RESCUE

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I—RECORD OF FISH DISTRIBUTION

RECAPITULATION—1944

HATCHERY PRODUCTION

Trout

Rainbow	12,794,688
Steelhead	1,857,133
Loch Leven	877,110
Eastern Brook	1,251,553
Total	16,780,484

Salmon

King	3,096,620
Silver	69,252
Kokanee	257,810
Total	3,423,682

GENERAL FISH RESCUE

Trout

Rainbow	21,862
Steelhead	1,743,104
Cutthroat	152
Total	1,765,118

Salmon

King	98,458
Silver	94,896
Total	193,354

Spiny Rayed

Smallmouth Black Bass	315,215
Largemouth Black Bass	563,962
Spotted Bass	3,009
Striped Bass	8,670
Calico Bass	10
Sacramento Perch	42,965
Crappie	10,344
Squaretail Catfish	238,909
Forkedtail Catfish	215,086
Bluegill Sunfish	89,566
Green Sunfish	8,020
Warmouth Bass	41,250
Sturgeon	5
Mosquito Fish	1,000
Total	1,538,011

II—RECORD OF FISH DISTRIBUTION

FROM COUNTY BY HATCHERY—1944

County	Hatchery	Total from county by hatchery	Rainbow	Steelhead	Loch Leven	Eastern Brook	King Salmon	Silver Salmon	Kokanee	Total
ALPINE	Basin Creek	57,000	57,000							
	Hot Creek	5,290	5,290							
	Mt. Shasta	80,500	75,500			5,000				
	Mt. Tallac	5,600	5,600							
	Tahoe	1,300				1,300				149,690
AMADOR	Mt. Shasta	175,500	134,500			41,000				175,500
BUTTE	Lake Almanor	13,550	11,550			2,000				
	Mt. Shasta	372,000	362,000			10,000				385,550
CALAVERAS	Basin Creek	199,470	199,470							199,470
COLUSA	Mt. Shasta	10,000	10,000							
	Plaskett Ponds	4,000	4,000							14,000
DEL NORTE	Prairie Creek	1,043,804		545,904			497,900			1,043,804
EL DORADO	Mt. Shasta	399,000	389,000			10,000				
	Mt. Tallac	730,590	730,590							
	Tahoe	413,110	55,460			288,380			69,270	1,542,700
FRESNO	Hot Creek	76,170	76,170							
	Kaweah	5,800	5,800							
	Kings River	687,605	687,605							
	Mt. Whitney	23,600	14,000			9,600				
	Sequoia	112,896	112,896							906,071
GLENN	Plaskett Ponds	13,000	13,000							13,000
HUMBOLDT	Prairie Creek	724,014	25,644	629,118				69,252		
	Mt. Shasta	3,200				3,200				727,214
INYO	Black Rock Springs	246,915	246,915							
	Hot Creek	31,417	21,417			10,000				
	Mt. Whitney	315,035	154,475		102,480	58,080				593,367
KERN	Kern	107,054	107,054							107,054

II—RECORD OF FISH DISTRIBUTION—Continued
From County by Hatchery—1944

County	Hatchery	Total from county by hatchery	Rainbow	Steelhead	Loch Leven	Eastern Brook	King Salmon	Silver Salmon	Kokanee	Total
LASSEN	Burney Creek	116,000	112,000			4,000				
	Lake Almanor	229,770	197,570			32,200				
	Mt. Shasta	43,000	43,000							388,770
LOS ANGELES	Fillmore	187,900	187,900							187,900
MADERA	Kings River	95,280	95,280							
	Hot Creek	43,760	43,760							
	Yosemite	6,600	6,600							145,640
MARIN	Brookdale	30,025	30,025							30,025
MARIPOSA	Mariposa	935,370	650,060		285,310					935,370
MODOC	Burney Creek	279,998	188,998		55,000	36,000				
	Mt. Shasta	34,000	34,000							313,998
MONO	Black Rock Springs	44,665	44,665							
	Hot Creek	1,088,302	910,224			178,078				
	Mt. Whitney	129,500	500		129,000					1,262,467
MONTEREY	Brookdale	97,245	52,065	45,180						97,245
NEVADA	Mt. Shasta	641,500	548,500			93,000				
	Mt. Tallac	19,640	19,640							
	Tahoe	96,350				13,700			82,650	757,490
ORANGE	Fillmore	14,300	14,300							14,300
PLACER	Mt. Shasta	263,000	253,000			10,000				
	Mt. Tallac	155,731	155,731							
	Tahoe	119,460	68,330			51,130				538,191
PLUMAS	Feather River	411,700	389,200			22,500				
	Lake Almanor	638,750	638,750							
	Mt. Shasta	44,000	44,000							1,094,450
RIVERSIDE	Fillmore	45,920	45,920							45,920
SAN BENITO	Brookdale	10,032	10,032							10,032

SAN BERNARDINO	Fillmore	244,925	244,925							244,925
SAN DIEGO	Fillmore	38,700	38,700							38,700
SAN FRANCISCO	Brookdale	43,670	43,670							43,670
SAN LUIS OBISPO	Fillmore	19,000	19,000							19,000
SAN MATEO	Brookdale	79,054	9,000	70,054						79,054
SANTA BARBARA	Fillmore	22,880	22,880							22,880
SANTA CLARA	Brookdale	50,997	50,997							50,997
SANTA CRUZ	Brookdale	294,122	30,020	264,102						294,122
SEQUOIA	Sequoia	90,916	90,916							90,916
SHASTA	Burney Creek	666,770	519,000		107,210	40,560				
	Lake Almanor	19,300	4,500			14,800				
	Mt. Shasta	433,400	386,000		25,000	22,400				1,119,470
SIERRA	Feather River	155,000	130,000			25,000				
	Mt. Shasta	27,000	20,000			7,000				
	Tahoe	3,840				3,840				
	Yuba River	228,120	183,100			45,020				413,960
SISKIYOU	Fall Creek	2,988,860	87,365	302,775			2,598,720			
	Mt. Shasta	691,868	554,648		63,000	74,220				3,680,728
TEHAMA	Lake Almanor	62,000	62,000							
	Mt. Shasta	235,000	230,000		5,000					297,000
TRINITY	Mt. Shasta	410,600	363,000			47,600				410,600
TULARE	Coy Flat	62,963	62,963							
	Kaweah	392,777	300,832			91,945				
	Kern	157,326	157,326							
	Mt. Whitney	57,800	57,800							824,697
	Sequoia	90,916	90,916							
	Buckeye Pond	52,915	52,915							
TUOLUMNE	Basin Creek	748,430	642,540						105,890	
	Yosemite	143,330	38,220		105,110					891,760
VENTURA	Fillmore	146,300	146,300							146,300
YUBA	Mt. Shasta	10,000	10,000							10,000
Total		20,204,166	12,794,688	1,857,133	877,110	1,251,553	3,096,620	69,252	257,810	20,204,166

III—RECORD OF FISH DISTRIBUTION

FROM HATCHERY BY COUNTY—1944

Hatchery	County	Total from hatchery by county	Rainbow	Steelhead	Loch Leven	Eastern Brook	King Salmon	Silver Salmon	Kokanee	Total
BASIN CREEK	Alpine	57,000	57,000							
	Calaveras	199,470	199,470							
	Tuolumne	748,430	642,540						105,890	1,004,900
BLACK ROCK SPRINGS	Inyo	246,915	246,915							
	Mono	44,665	44,665							291,580
BROOKDALE	Marin	30,025	30,025							
	Monterey	97,245	52,065	45,180						
	San Benito	10,032	10,032							
	San Francisco	43,670	43,670							
	San Mateo	79,054	9,000	70,054						
	Santa Clara	50,997	50,997							
	Santa Cruz	294,122	30,020	264,102						605,145
BURNEY	Lassen	116,000	112,000			4,000				
	Modoc	279,998	188,998		55,000	36,000				
	Shasta	666,770	519,000		107,210	40,560				1,062,768
COY FLAT	Tulare	62,963	62,963							62,963
FALL CREEK	Siskiyou	2,988,860	87,365	302,775			2,598,720			2,988,860
FEATHER RIVER	Plumas	411,700	389,200			22,500				
	Sierra	155,000	130,000			25,000				566,700
FILLMORE	Los Angeles	187,900	187,900							
	Orange	14,300	14,300							
	Riverside	45,920	45,920							
	San Bernardino	244,925	244,925							
	San Diego	38,700	38,700							
	San Luis Obispo	19,000	19,000							
	Santa Barbara	22,880	22,880							
	Ventura	146,300	146,300							719,925

HOT CREEK	Alpine	5,290	5,290							
	Fresno	76,170	76,170							
	Inyo	31,417	21,417			10,000				
	Madera	43,760	43,760							
	Mono	1,088,302	910,224			178,078				1,244,939
KAWEAH	Fresno	5,800	5,800							
	Tulare	392,777	300,832			91,945				398,577
KERN	Kern	107,054	107,054							
	Tulare	157,326	157,326							264,380
KINGS RIVER	Fresno	687,605	687,605							
	Madera	95,280	95,280							782,885
LAKE ALMANOR	Butte	13,550	11,550			2,000				
	Lassen	229,770	197,570			32,200				
	Plumas	638,750	638,750							
	Shasta	19,300	4,500			14,800				
	Tehama	62,000	62,000							963,370
MOUNT SHASTA	Alpine	80,500	75,500			5,000				
	Amador	175,500	134,500			41,000				
	Butte	372,000	362,000			10,000				
	Colusa	10,000	10,000							
	El Dorado	399,000	389,000			10,000				
	Humboldt	3,200				3,200				
	Lassen	43,000	43,000							
	Modoc	34,000	34,000							
	Nevada	641,500	548,500			93,000				
	Placer	263,000	253,000			10,000				
	Plumas	44,000	44,000							
	Shasta	433,400	386,000		25,000	22,400				
	Sierra	27,000	20,000			7,000				
	Siskiyou	691,868	554,648		63,000	74,220				
	Tehama	235,000	230,000		5,000					
	Trinity	410,600	363,000			47,600				
	Yuba	10,000	10,000							3,873,568
MOUNT TALLAC	Alpine	5,600	5,600							
	El Dorado	730,590	730,590							
	Nevada	19,640	19,640							
	Placer	155,731	155,731							911,561
MOUNT WHITNEY	Fresno	23,600	14,000			9,600				
	Inyo	315,035	154,475		102,480	58,080				
	Mono	129,500	500		129,000					
	Tulare	57,800	57,800							525,935

III—RECORD OF FISH DISTRIBUTION—Continued

From Hatchery by County—1944

Hatchery	County	Total from hatchery by county	Rainbow	Steelhead	Loch Leven	Eastern Brook	King Salmon	Silver Salmon	Kokanee	Total
PLASKETT PONDS	Colusa	4,000	4,000							
	Glenn	13,000	13,000							17,000
PRAIRIE CREEK	Del Norte	1,043,804		545,904			497,900			
	Humboldt	724,014	25,644	629,118				69,252		1,767,818
SEQUOIA	Fresno	112,896	112,896							
	Tulare	90,916	90,916							203,812
TAHOE	Alpine	1,300				1,300				
	El Dorado	413,110	55,460			288,380			69,270	
	Nevada	96,350				13,700			82,650	
	Placer	119,460	68,330			51,130				
	Sierra	3,840				3,840				634,060
YOSEMITE	Madera	6,600	6,600							
	Mariposa	935,370	650,060		285,310					
	Tuolumne	143,330	38,220		105,110					1,085,300
YUBA RIVER	Sierra	228,120	183,100			45,020				228,120
	Totals	20,204,166	12,794,688	1,857,133	877,110	1,251,553	3,096,620	69,252	257,810	20,204,166

IV—SPINY RAYED FISH RESCUE RECAPITULATION—1944

Source	County	Mosquito	Spotted Bass	Smallmouth Black Bass	Largemouth Black Bass	Stripped Bass	Calico Bass	Sacramento Perch	Crappie	Squaretail Catfish	Forkedtail Catfish	Bluegill Sunfish	Green Sunfish	Warmouth Bass	Sturgeon	Total
CENTRAL VALLEYS FISH RESCUE	Alameda				1,950							300				2,250
	Amador		9		25							30				64
	Contra Costa				2,360							500				2,860
	Mariposa							11,900								11,900
	Merced							30,600								30,600
	Napa			10,652							1,210	6	1,273			13,141
	Placer	1,000			15							10				1,025
	Sacramento		3,000	13,040	501,914	4,537		465	6,499	200,870	113,983	71,679	149	40,654	3	956,793
	San Francisco			45	26,770		10			1		19		6		26,851
	San Joaquin			8	3,297	220			5	1,055	26,025	1,271	1,737	90		33,708
	Solano			82,840							2,820					85,660
	Sutter				6,753	937					17,100		3,100		2	27,892
	Yolo			206,130	20,377	2,976				15,950	50,836	6,005	1,261	500		304,035
COAST FISH RESCUE	Monterey									3,875	3,112					6,987
	Santa Clara				496											496
FRESNO FISH RESCUE	Fresno			2,500						500						3,000
	Kern								940	4,925						5,865
	Kings									250						250
	Tulare									575						575
SOUTHERN CALIFORNIA FISH RESCUE	Los Angeles				5					2,708		411	500			3,624
	Riverside									3,000		1,500				4,500
	San Bernardino									3,200		3,600				6,800
	San Diego								2,900			775				3,675
	Santa Barbara											660				660
	Ventura									2,000		2,800				4,800
Total Fish Rescue (Spiny Rayed)		1,000	3,009	315,215	563,962	8,670	10	42,965	10,344	238,909	215,086	89,566	8,020	41,250	5	1,538,011

V—TROUT AND SALMON RESCUE RECAPITULATION—1944

Source	County	Rainbow	Steelhead	Cutthroat	King Salmon	Silver Salmon	Total
CENTRAL VALLEYS FISH RESCUE	Sacramento				25,198		25,198
	Sutter				21,850		21,850
	Yolo				23,550		23,550
CENTRAL CALIFORNIA FISH RESCUE	Tuolumne	3,830					3,830
COAST FISH RESCUE	Monterey		2,086				2,086
	San Benito		5,000				5,000
	Santa Clara		79				79
MISCELLANEOUS FISH RESCUE	Glenn		7,200				7,200
NORTH COAST FISH RESCUE	Del Norte		13,602	152	27,860	32,043	73,657
	Humboldt					2,343	2,343
	Lake		249,788				249,788
	Mendocino		418,663			60,510	479,173
	Sonoma		6,721				6,721
NORTHERN CALIFORNIA FISH RESCUE	Shasta	32					32
SOUTHERN CALIFORNIA FISH RESCUE	San Bernardino	18,000	93,160				18,000
	San Luis Obispo		813,180				93,160
	Santa Barbara		133,625				813,180
	Ventura						133,625
Total Trout and Salmon Rescue		21,862	1,743,104	152	98,458	94,896	1,958,472

VI—RECAPITULATION—1945

HATCHERY PRODUCTION

Trout

Rainbow	14,918,913
Steelhead	1,208,757
Loch Leven	529,680
Eastern Brook	1,554,565
Total	18,211,915

Salmon

King	3,018,080
Kokanee	252,160
Total	3,270,240

GENERAL FISH RESCUE

Trout

Rainbow	2,000
Steelhead	1,702,353
Loch Leven	1,600
Total	1,705,953

Salmon

King	126,014
Silver	67,175
Total	193,189

Spiny-Rayed

Smallmouth Black Bass	178,315
Largemouth Black Bass	290,035
Spotted Bass	12,903
Viviparous Perch	2,330
Striped Bass	40,209
Calico Bass	75,000
Sacramento Perch	18,571
Crappie	88,882
Squaretail Catfish	207,707
Forkedtail Catfish	610,288
Bluegill Sunfish	602,026
Green Sunfish	355,586
Warmouth Bass	101,784
Sturgeon	5
Total	2,583,641

VII—RECORD OF FISH DISTRIBUTION

FROM COUNTY BY HATCHERY—1945

	Basin Creek Hatchery	Hot Creek Hatchery	Mt. Shasta Hatchery	Tahoe Hatchery	Mt. Tallac Hatchery	Total from county by hatchery
ALPINE COUNTY						
Rainbow	35,700	6,600	76,000		4,770	123,070
Eastern Brook	18,000			10,140		28,140
	53,700	6,600	76,000	10,140	4,770	151,210
AMADOR COUNTY						
Rainbow			122,000			122,000
Eastern Brook			39,000			39,000
			161,000			161,000
BUTTE COUNTY	Lake Almanor					
Rainbow	23,400		387,000			410,400
Eastern Brook	5,400					5,400
	28,800		387,000			415,800
CALAVERAS COUNTY	Basin Creek	Table Mountain Rearing Pond				
Rainbow	127,000		11,400			138,400
DEL NORTE COUNTY			Prairie Creek			
Steelhead			492,280			492,280
King Salmon			487,360			487,360
			979,640			979,640
EL DORADO COUNTY	Mt. Shasta	Tahoe	Mt. Tallac			
Rainbow			363,000	206,980	552,930	1,122,910
Eastern Brook			8,000	271,390		279,390
Kokanee				79,380		79,380
			371,000	557,750	552,930	1,481,680
FRESNO COUNTY	Hot Creek	Huntington Lake	Kings River	Mt. Whitney	Sequoia	
Rainbow	49,240	51,230	651,975	30,750	115,696	898,891
Eastern Brook		39,090		12,096		51,186
	49,240	90,320	651,975	42,846	115,696	950,077

GLENN COUNTY	Mt. Shasta					
Rainbow		20,000				20,000
HUMBOLDT COUNTY	Prairie Creek		Mt. Shasta			
Steelhead		377,588				377,588
Eastern Brook				2,000		2,000
		377,588		2,000		379,588
	Black Rock Springs					
INYO COUNTY		Hot Creek	Mt. Whitney			
Rainbow	259,184	19,532	177,933			456,649
Loch Leven			16,790			16,790
Eastern Brook		18,000	92,612			110,612
	259,184	37,532	287,335			584,051
KERN COUNTY	Black Rock	Kern				
Rainbow	6,206	122,717				128,923
LASSEN COUNTY	Burney Creek	Lake Almanor				
Rainbow	180,410		292,000			472,410
Eastern	3,600		44,700			48,300
	184,010		336,700			520,710
LOS ANGELES COUNTY	Fillmore	Whittier				
Rainbow	241,970	2,280				244,250
MADERA COUNTY	Kings River	Hot Creek	Yosemite			
Rainbow	142,400	46,635	16,800			205,835
MARIN COUNTY	Brookdale					
Rainbow	5,760					5,760
MARIPOSA COUNTY			Yosemite			
Rainbow			731,100			731,100
Loch Leven			146,880			146,880
Eastern Brook			84,880			84,880
			962,860			962,860
MODOC COUNTY	Burney Creek					
Rainbow	446,670					446,670
MONO COUNTY	Black Rock Springs	Hot Creek	Mt. Whitney			
Rainbow	38,971	979,902				1,018,873
Loch Leven			245,320			245,320
Eastern Brook		168,959				168,959
	38,971	1,148,861	245,320			1,433,152

VII—RECORD OF FISH DISTRIBUTION—Continued

From County by Hatchery—1945

	Basin Creek Hatchery	Hot Creek Hatchery	Mt. Shasta Hatchery	Tahoe Hatchery	Mt. Tallac Hatchery	Total from county by hatchery
MONTEREY COUNTY	Brookdale					
Rainbow	31,202					31,202
Steelhead	31,250					31,250
	62,452					62,452
NEVADA COUNTY	Mt. Shasta	Tahoe				
Rainbow	606,922	51,680				658,602
Eastern Brook	83,406	5,000				88,406
Kokanee		74,280				74,280
	690,328	130,960				821,288
ORANGE COUNTY	Fillmore					
Rainbow	6,150					6,150
PLACER COUNTY	Mt. Shasta	Mt. Tallac	Tahoe			
Rainbow	259,136	181,330	943,960			1,384,426
Eastern Brook	19,100		63,740			82,840
	278,236	181,330	1,007,700			1,467,266
PLUMAS COUNTY	Feather River	Lake Almanor	Mt. Shasta			
Rainbow	407,972	1,220,900	80,000			1,708,872
Eastern Brook	69,980	9,500				79,480
	477,952	1,230,400	80,000			1,788,352
RIVERSIDE COUNTY	Fillmore	Whittier				
Rainbow	49,400	2,500				51,900
SAN BENITO COUNTY	Brookdale					
Rainbow	5,810					5,810
SAN BERNARDINO COUNTY	Fillmore	Whittier				
Rainbow	233,000	3,000				236,000
SAN DIEGO COUNTY	Fillmore					
Rainbow	47,180					47,180

SAN FRANCISCO COUNTY	Brookdale					
Rainbow	108,320					108,320
SAN LUIS OBISPO COUNTY	Fillmore					
Rainbow	14,100					14,100
SAN MATEO COUNTY	Brookdale					
Rainbow	15,960					15,960
Steelhead	58,540					58,540
	74,500					74,500
SANTA BARBARA COUNTY	Fillmore					
Rainbow	20,650					20,650
SANTA CLARA COUNTY	Brookdale					
Rainbow	181,957					181,957
SANTA CRUZ COUNTY	Brookdale					
Rainbow	56,689					56,689
Steelhead	180,438					180,438
	237,127					237,127
SHASTA COUNTY	Burney Creek	Lake Almanor	Mt. Shasta			
Rainbow	670,351	57,300	390,240			1,117,891
Loch Leven	67,230					67,230
Eastern Brook	18,002	9,800	6,400			34,202
	755,583	67,100	396,640			1,219,323
SIERRA COUNTY	Feather River	Mt. Shasta	Tahoe	Yuba River		
Rainbow	106,000	53,402	3,600	241,400		404,402
Eastern Brook	21,120			69,350		90,470
	127,120	53,402	3,600	310,750		494,872
SISKIYOU COUNTY	Burney Creek	Fall Creek	Mt. Shasta			
Rainbow		32,443	556,200			588,643
Steelhead		68,661				68,661
Loch Leven	7,000		7,100			14,100
Eastern Brook	17,259		80,832			98,091
King Salmon		2,526,220	4,500			2,530,720
	24,259	2,627,324	648,632			3,300,215
TEHAMA COUNTY	Lake Almanor	Mt. Shasta				
Rainbow	73,900	205,000				278,900
Eastern Brook	6,600	3,000				9,600
	80,500	208,000				288,500

VII—RECORD OF FISH DISTRIBUTION—Continued

From County by Hatchery—1945

		Basin Creek Hatchery	Hot Creek Hatchery	Mt. Shasta Hatchery	Tahoe Hatchery	Mt. Tallac Hatchery	Total from county by hatchery
TRINITY COUNTY		Mt. Shasta					
Rainbow		134,000					134,000
Eastern Brook		34,240					34,240
		168,240					168,240
TULARE COUNTY	Buckeye Ponds	Coy Flat	Kaweah	Kern	Mt. Whitney	Sequoia	
Rainbow	32,326	62,532	310,252	152,678	59,985	82,375	700,148
Eastern Brook			56,649				56,649
	32,326	62,532	366,901	152,678	59,985	82,375	756,797
TUOLUMNE COUNTY		Basin Creek	Yosemite				
Rainbow		387,570	124,210				511,780
Eastern Brook		29,120	133,600				162,720
Kokanee		98,500					98,500
Loch Leven			39,360				39,360
		515,190	297,170				812,360
VENTURA COUNTY		Fillmore					
Rainbow		76,050					76,050
YUBA COUNTY		Mt. Shasta	Yuba River				
Rainbow		25,000	8,140				33,140

GRAND TOTAL FROM COUNTY BY HATCHERY

Rainbow	14,918,913
Steelhead	1,208,757
Loch Leven	529,680
Eastern Brook	1,554,565
King Salmon	3,018,080
Kokanee	252,160
Grand total	21,482,155

VIII—RECORD OF FISH DISTRIBUTION

From Hatchery by County—1945

BASIN CREEK HATCHERY

	Alpine	Calaveras	Tuolumne	Total
Rainbow	35,700	127,000	387,570	550,270
Eastern Brook	18,000		29,120	47,120
Kokanee			98,500	98,500
	53,700	127,000	515,190	695,890

BLACK ROCK SPRINGS HATCHERY

	Inyo	Kern	Mono	Total
Rainbow	259,184	6,206	38,971	304,361

BROOKDALE HATCHERY

	Marin	Monterey	San Benito	San Francisco
Rainbow	5,760	31,202	5,810	108,320
Steelhead		31,250		
	5,760	62,452	5,810	108,320

BROOKDALE HATCHERY—Continued

	San Mateo	Santa Clara	Santa Cruz	Total
Rainbow	15,960	181,957	56,689	405,698
Steelhead	58,540		180,438	270,228
	74,500	181,957	237,127	675,926

BUCKEYE PONDS

	Tulare	Total
Rainbow	32,326	32,326

BURNEY HATCHERY

	Lassen	Modoc	Shasta	Siskiyou	Total
Rainbow	180,410	446,670	670,351		1,297,431
Loch Leven			67,230	7,000	74,230
Eastern Brook	3,600		18,002	17,259	38,861
	184,010	446,670	755,583	24,259	1,410,522

VIII—RECORD OF FISH DISTRIBUTION—Continued

From Hatchery by County—1945

COY FLAT STATION

	Tulare	Total
Rainbow	62,532	62,532

FALL CREEK HATCHERY

	Siskiyou	Total
Rainbow	32,443	32,443
Steelhead	68,661	68,661
King Salmon	2,526,220	2,526,220
Total	2,627,324	2,627,324

FEATHER RIVER HATCHERY

	Plumas	Sierra	Total
Rainbow	407,972	106,000	513,972
Eastern Brook	69,980	21,120	91,100
	477,952	127,120	605,072

FILLMORE HATCHERY

	Los Angeles	Orange	Riverside	San Bernardino	San Diego
Rainbow	241,970	6,150	49,400	233,000	47,180

FILLMORE HATCHERY—Continued

	San Luis Obispo	Santa Barbara	Ventura	Total
Rainbow	14,100	20,650	76,050	688,500

HOT CREEK HATCHERY

	Alpine	Fresno	Inyo	Madera	Mono	Total
Rainbow	6,600	49,240	19,532	46,635	979,902	1,101,909
Eastern Brook			18,000		168,959	186,959
	6,600	49,240	37,532	46,635	1,148,861	1,288,868

VIII—RECORD OF FISH DISTRIBUTION—Continued

From Hatchery by County—1945

HUNTINGTON LAKE HATCHERY

	Fresno
Rainbow	51,230
Eastern Brook	39,090
Total	90,320

KAWEAH HATCHERY

	Tulare
Rainbow	310,252
Eastern Brook	56,649
Total	366,901

KERN HATCHERY

	Kern	Tulare	Total
Rainbow	122,717	152,678	275,395

KINGS RIVER HATCHERY

	Fresno	Madera	Total
Rainbow	651,975	142,400	794,375

LAKE ALMANOR HATCHERY

	Butte	Lassen	Plumas	Shasta	Tehama	Total
Rainbow	23,400	292,000	1,220,900	57,300	73,900	1,667,500
Eastern Brook	5,400	44,700	9,500	9,800	6,600	76,000
	28,800	336,700	1,230,400	67,100	80,500	1,743,500

MT. SHASTA HATCHERY

	Alpine	Amador	Butte	El Dorado
Rainbow	76,000	122,000	387,000	363,000
Eastern Brook		39,000		8,000
King Salmon				
	76,000	161,000	387,000	371,000

VIII—RECORD OF FISH DISTRIBUTION—Continued

From Hatchery by County—1945

MT. SHASTA HATCHERY—Continued

	Glenn	Humboldt	Nevada	Placer
Rainbow	20,000		606,922	259,136
Eastern Brook		2,000	83,406	19,100
King Salmon				
	20,000	2,000	690,328	278,236

MT. SHASTA HATCHERY—Continued

	Plumas	Shasta	Sierra	Siskiyou
Rainbow	80,000	390,240	53,402	556,200
Eastern Brook		6,400	80,832	3,000
King Salmon				4,500
Loch Leven				7,100
	80,000	396,640	53,402	648,632

MT. SHASTA HATCHERY—Continued

	Tehama	Trinity	Yuba	Total
Rainbow	205,000	134,000	25,000	3,277,900
Eastern Brook	3,000	34,240		275,978
King Salmon				4,500
Loch Leven				7,100
	208,000	168,240	25,000	3,565,478

MT. TALLAC HATCHERY

	Alpine	El Dorado	Placer	Total
Rainbow	4,770	552,930	181,330	739,030

MT. WHITNEY HATCHERY

	Fresno	Inyo	Mono	Tulare	Total
Rainbow	30,750	177,933		59,985	268,668
Eastern Brook	12,096	92,612			104,708
Loch Leven		16,790	245,320		262,110
	42,846	287,335	245,320	59,985	635,486

VIII—RECORD OF FISH DISTRIBUTION—Continued

From Hatchery by County—1945

PRAIRIE CREEK HATCHERY

	Del Norte	Humboldt	Total
Steelhead	492,280	377,588	869,868
King Salmon	487,360		487,360
	979,640	377,588	1,357,228

SEQUOIA HATCHERY

	Fresno	Tulare	Total
Rainbow	115,696	82,375	198,071

TABLE MOUNTAIN REARING POND

	Calaveras	Total
Rainbow	11,400	11,400

TAHOE HATCHERY

	Alpine	El Dorado	Nevada	Placer	Sierra	Total
Rainbow		206,980	51,680	943,960	3,600	1,206,220
Eastern Brook	10,140	271,390	5,000	63,740		350,270
Kokanee		79,380	74,280			153,660
	10,140	557,750	130,960	1,007,700	3,600	1,710,150

WHITTIER HATCHERY

	Los Angeles	Riverside	San Bernardino	Total
Rainbow	2,280	2,500	3,000	7,780

YOSEMITE HATCHERY

	Madera	Mariposa	Tuolumne	Total
Rainbow	16,800	731,100	124,210	872,110
Eastern Brook		84,880	133,600	218,480
Loch Leven		146,880	39,360	186,240
	16,800	962,860	297,170	1,276,830

GRAND TOTAL

Rainbow	14,918,913
Steelhead	1,208,757
Eastern Brook	1,554,565
Loch Leven	529,680
King Salmon	3,018,080
Kokanee	252,160
Grand total from hatcheries by county	21,482,155

IX—SPINY-RAYED FISH RESCUE RECAPITULATION—1945

Central Valley Fish Rescue	Alameda	Amador	Contra Costa	Fresno	Merced	Napa	Nevada	Sacramento
Central Valley Fish Rescue								
Spotted Bass								12,643
Small Mouth Black Bass						39,897		8,034
Large Mouth Black Bass	50	90	265	50	50		50	200,063
Viviparous Perch								2,330
Striped Bass								1,654
Sacramento Perch								17,555
Crappie								31,380
Squaretail Catfish						3,000		65,093
Forkedtail Catfish						300		230,415
Bluegill Sunfish	322		2,005					46,152
Green Sunfish						46,110		77,800
Warmouth Bass								91,043
Sturgeon								2
Totals	372	90	2,270	50	50	89,307	50	784,164

	San Francisco	San Joaquin	Santa Clara	Sutter	Yolo	Total
Central Valley Fish Rescue—Continued						
Spotted Bass						12,643
Small Mouth Black Bass					130,078	178,009
Large Mouth Black Bass	29,271	14,800		7,794	8,544	261,027
Viviparous Perch						2,330
Striped Bass		900		9,671	27,967	40,192
Sacramento Perch						17,555
Crappie				1,845	9,770	42,995
Squaretail Catfish					45,000	113,093
Fordedtail Catfish		46,200		76,000	254,731	607,646
Bluegill Sunfish		2,250	250	9,008		59,987
Green Sunfish		8,000		31,200	191,850	354,960
Warmouth Bass				10,000		101,043
Sturgeon					3	5
Totals	29,271	72,150	250	145,518	667,943	1,791,485

IX—SPINY-RAYED FISH RESCUE RECAPITULATION—1945—Continued

	Contra Costa	Total
Coast Fish Rescue		
Small Mouth Black Bass	306	306
Bluegill Sunfish	639	639
Totals	945	945

	Merced	San Joaquin	Stanislaus	Total
Fresno Modesto Fish Rescue				
Large Mouth Black Bass	77	99	931	1,107
Striped Bass	8	9		17
Crappie	181	2,560	10,397	13,138
Squaretail Catfish		15	4,182	4,197
Forkedtail Catfish	142	138	807	1,087
Bluegill Sunfish	1,434	68	2,512	4,104
Green Sunfish	246		380	626
Warmouth Bass		21	720	741
Sturgeon				
Totals	2,088	2,910	19,929	24,927

	Alpine	Lake	Total
Northern California Fish Rescue			
Spotted Bass	260		260
Large Mouth Black Bass		459	459
Calico Bass		75,000	75,000
Sacramento Perch		1,016	1,016
Crappie		3,445	3,445
Squaretail Catfish		2,004	2,004
Forkedtail Catfish		1,555	1,555
Bluegill Sunfish		5,065	5,065
Totals	260	88,544	88,804

IX—SPINY-RAYED FISH RESCUE RECAPITULATION—1945—Continued

	Kern	Los Angeles	Madera	Merced	Orange	Riverside	San Bernardino
Southern California Fish Rescue							
Large Mouth Black Bass	25	5,806	917	5,133	631	12,332	85
Crappie						29,000	2
Squaretail Catfish						40,960	7,993
Bluegill Sunfish						109,950	49,435
Totals	25	5,806	917	5,133	631	192,242	57,515

	San Diego	San Luis Obispo	Santa Barbara	Ventura	Total
Southern California Fish Rescue—Continued					
Large Mouth Black Bass	570		45	1,898	27,442
Crappie	300			2	29,304
Squaretail Catfish					48,953
Bluegill Sunfish	4,841	15,520	17,240	46,162	243,148
Totals	5,711	15,520	17,285	48,062	348,847

Grand Total Spiny-Rayed Fish Rescue	
Spotted Bass	12,903
Small Mouth Black Bass	178,315
Large Mouth Black Bass	290,035
Viviparous Perch	2,330
Striped Bass	40,209
Calico Bass	75,000
Sacramento Perch	18,571
Crappie	88,882
Squaretail Catfish	207,707
Forkedtail Catfish	610,288
Bluegill Sunfish	602,026
Green Sunfish	355,586
Warmouth Bass	101,784
Sturgeon	5
Grand total	2,583,641

X—TROUT AND SALMON RESCUE RECAPITULATION

BY COUNTY—1945

	Butte	Sacramento	San Joaquin	Sutter	Yolo	Total
Central Valley Fish Rescue						
King Salmon	5,700	51,867	999	33,821	33,627	126,014

	San Mateo	Santa Clara	Total
Central Valley Fish Rescue			
Steelhead	1,500	59,450	60,950

	Del Norte	Lake	Mendocino	Shasta	Sonoma	Total
Northern California Fish Rescue						
Silver Salmon	2,934		64,241			67,175
Steelhead		125,977	638,016		10,230	774,223
Rainbow				400		400
Loch Leven				1,600		1,600
	2,934	125,977	702,257	2,000	10,230	843,398

X—TROUT AND SALMON RESCUE RECAPITULATION—Continued

	San Diego	San Luis Obispo	Santa Barbara	Total
Southern California Fish Rescue				
Steelhead	2,000	113,440	751,740	867,180
Rainbow			1,600	1,600
	2,000	113,440	753,340	868,780

TOTAL TROUT AND SALMON RESCUE

Rainbow	2,000
Steelhead	1,702,353
Loch Leven	1,600
King Salmon	126,014
Silver Salmon	67,175
Grand total	1,899,142

GAME STATISTICS

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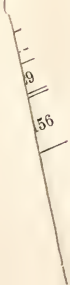
1. Nineteen Year Record of Deer Kill 134a
2. Record of Mountain Lion Bounties Paid by Division of Fish and Game 134b
3. Predatory Animal Catch by Counties 136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33	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	Totals	County
2		1					1			1			8	Alameda
													3	Alpine
1		1											26	Amador
1	3	4	2	1		4	1		3	3			66	Butte
1	4		2	2	1	1	3	1					62	Calaveras
	4	4		1		1	2						75	Colusa
														Contra Costa
3	1	4	4	6	11	7	8	5	1		1	1	213	Del Norte
5	13	3	3	8		2	6	3	6	1	2	1	213	El Dorado
2	4		4	3	6	16	2	7	19	3	2	2	163	Fresno
9	5	7	8	9	11	7	5	7	6	12	14	7	231	Glenn
9	22	28	19	24	25	28	16	22	7	5	19	11	1,015	Humboldt
													2	Imperial
						1	3						22	Inyo
6	6	4	5	5	12	5	2	10	5	13	5	9	403	Kern
													1	Kings
1	11	13	13	12	15	10	8	12	9	7	7	3	473	Lake
1	2											1	13	Lassen
1	3	2	3	8	5	6	5	3	2			1	178	Los Angeles
	8	3	1	2	4	3	4	12	1	9		2	101	Madera
1							1						3	Marin
1	3				1	4							138	Mariposa
1	5	13	4	12	16	21	11	31	20	8	20	6	639	Mendocino
													5	Merced
												1	6	Modoc
1													18	Mono
3	2	19	8	17	11	19	14	16	10	6	17	14	552	Monterey
					1								4	Napa
4	6	1		1	1	5		1			1		33	Nevada
			2				5						18	Orange
9	1	5	3		7	4	2						116	Placer
	3	1					1						19	Plumas
7	6	8	1	2	3		3	2		5	5	1	107	Riverside
													1	Sacramento
3	2				1						1	3	64	San Benito
7	8	2	7	4	4	15	8	6	2	2	1	7	159	San Bernardino
5	12	12	12	14	4	11	10	6	6	2		2	240	San Diego
														San Francisco
7													2	San Joaquin
7		1	1	2	4	5	4	5	2	7	3	4	225	San Luis Obispo
													1	San Mateo
7	14	20	7	5	11	11	18	5	6		4	6	424	Santa Barbara
7	6	13	3	2	5	1	4	1		9	4	3	120	Santa Clara
													4	Santa Cruz
9	20	22	3	18	8	11	8	7	5	18	9	4	640	Shasta
1	2	12	1					2	3	1		2	41	Sierra
3	7	12	20	18	18	22	12	31	13	4	4	3	502	Siskiyou
														Solano
	1										1		31	Sonoma
	1				3								25	Stanislaus
													2	Sutter
	7	9	8	6	10	9	3	4	6	2	17	11	404	Tehama
5	12	18	18	29	28	50	38	24	19	23	13	15	851	Trinity
	4	7	9	8	15	13	17	12	8	6	17	21	450	Tulare
	3	5	4	3	1		1	6			3	2	185	Tuolumne
2	1	1	2	1	9		2	2		1			164	Ventura
											2		3	Yolo
5	3			1	2				3	2	5		45	Yuba
9	215	255	177	224	253	292	228	243	162	150	177	143	9,509	Totals

III—PREDATORY ANIMAL CATCH BY COUNTIES

	July 1, 1944, to June 30, 1945				July 1, 1945, to June 30, 1946				Total for biennium
	Coyote	Bobcat	Other predators	Total	Coyote	Bobcat	Other predators	Total	
Alpine	41	5		46					46
Amador	25	2		27	57	9	1	67	94
Butte	37	3	52	92	51	1	94	146	238
Colusa					15	16		31	31
El Dorado	84	9	17	110	95	17	5	117	227
Fresno	80	14	11	105	165	20	60	245	350
Glenn	1	1		2					2
Humboldt					10	126	41	177	177
Inyo	150	12	5	167	109	5	23	137	304
Kern	168	16	35	219	214	17	37	268	487
Kings					31	3	9	43	43
Lake					31	13		44	44
Lassen	341	10	78	429	304	7	49	360	789
Los Angeles	254	39	94	387	146	14	37	197	584
Mariposa	48	6	77	131					131
Merced					1			1	1
Modoc	222	8	50	280	49	2		51	331
Mono					63	4	1	68	68
Monterey	98	44	58	200	145	36	40	221	421
Nevada	17	1	33	51	6	3		9	60
Plumas	9			9	6	1		7	16
Riverside	118	11	17	146	252	57	54	363	509
Sacramento							6	6	6
San Benito	196	89	113	398	208	91	145	444	842
San Bernardino	69	5	3	77	248	36	33	317	394
San Diego	113	48	133	294	208	36	98	342	636
San Luis Obispo	20	4	15	39	259	52	75	386	425
Santa Barbara	574	81	15	670	569	84	35	688	1,358
Santa Cruz	29	5	91	125					125
Shasta	69	9	3	81	161	6	2	169	250
Sierra					2			2	2
Siskiyou	85	14	2	101	9		58	67	168
Stanislaus	27	4	28	59					59
Tehama	20	5		25	19	3	10	32	57
Trinity	85	35	12	132	43	16	5	64	196
Tulare	69	3	42	114	85	10	6	101	215
Tuolumne	97	13	35	145	38	8	1	47	192
Ventura	327	46	119	492	237	64	74	375	867
Yuba					15		7	22	22
Totals	3,473	542	1,138	5,153	3,851	757	1,006	5,614	10,767

	1944-45	1945-46
Average number of trappers	20	20
Miles of trapline	276,063	305,141
Number of sets	266,997	283,042
Number of days	5,983	5,902

GAME BIRD RELEASES

LIBERATION OF GAME FARM BIRDS, JANUARY 1, 1944, THROUGH DECEMBER 31, 1945

County	Ringneck	Reeves	Turkey	Chukar	Valley Quail	Total
1. Alameda	614				24	638
2. Alpine						
3. Amador	681	157		121		959
4. Butte	748					748
5. Calaveras	120					120
6. Colusa	420			58		478
7. Contra Costa	1,122					1,122
8. Del Norte						
9. El Dorado	251	60			35	346
10. Fresno	4,053	4		574		4,631
11. Glenn	2,560			21		2,581
12. Humboldt	969					969
13. Imperial	2,652					2,652
14. Inyo	3,364					3,364
15. Kern	3,274		108	977		4,359
16. Kings	1,476					1,476
17. Lake	149					149
18. Lassen	880					880
19. Los Angeles	674	54				728
20. Madera	165			86		251
21. Marin	1,457				80	1,537
22. Mariposa		180		70		250
23. Mendocino	17					17
24. Merced	2,914			34		2,948
25. Modoc	1,761			198		1,959
26. Mono	403			49		452
27. Monterey	652		246	40		938
28. Napa	1,019			162	152	1,333
29. Nevada						
30. Orange	776			72		848
31. Placer	594	146		258		998
32. Plumas	344			30		374
33. Riverside	1,304	177	17	744	50	2,292
34. Sacramento	1,508	16			37	1,561
35. San Benito	208		48			256
36. San Bernardino	1,871	38		694		2,603
37. San Diego	90			251		341
38. San Francisco						
39. San Joaquin	1,713					1,713
40. San Luis Obispo	260			359	60	679
41. San Mateo	587					587
42. Santa Barbara	312					312
43. Santa Clara	786					786
44. Santa Cruz	337					337
45. Shasta	1,280	69		456		1,805
46. Sierra	1,047			114		1,161
47. Siskiyou	1,303	100		52		1,455
48. Solano	1,959					1,959
49. Sonoma	1,355		20		90	1,465
50. Stanislaus	340					340
51. Sutter	135					135
52. Tehama	1,618					1,618
53. Trinity						
54. Tulare	3,695					3,695
55. Tuolumne	924	45		337		1,306
56. Ventura	392					392
57. Yolo	424			193		617
58. Yuba	118					118
Totals	57,675	1,046	439	5,950	528	65,638

LICENSE SALES

Page

1. License Sales, 1944 Series 140
2. Deer Meat Permits, 1944 Series 143
3. Miscellaneous License Sales by Branch Office and Agents, 1944 Series 146
4. License Sales, 1945 Series 148
5. Deer Meat Permits, 1945 Series 154
6. Miscellaneous License Sales by Branch Office and Agents, 1945 Series 155

FINAL STATEMENT OF LICENSE SALES, 1944 SERIES

County	Angling licenses					Market fisherman $10 each	Pheasant tags $1 each
	Citizen $2 each	Nonresident $3 each	Alien	Duplicate 50 cents each	Total angling		
Alameda	$60,672 00	$51 00	$755 00	$60 00	$61,538 00		$9,489 00
Alpine	296 00	195 00			491 00		
Amador	1,788 00		10 00	2 00	1,800 00		335 00
Butte	10,186 00	27 00	25 00	27 50	10,265 50		5,319 00
Calaveras	2,230 00		5 00	4 00	2,239 00		197 00
Colusa	1,332 00		5 00	2 50	1,339 50		1,984 00
Contra Costa	21,400 00	45 00	310 00	24 00	21,779 00	$2,130 00	3,946 00
Del Norte	2,260 00	327 00	5 00	8 50	2,600 50	460 00	26 00
El Dorado	4,528 00	123 00	10 00	7 00	4,668 00		427 00
Fresno:							
Agents	22,562 00	3 00		8 50	22,573 50		3,630 00
Fresno Branch	912 00	45 00	300 00	27 50	1,284 50		419 00
Totals, Fresno	$23,474 00	$48 00	$300 00	$36 00	$23,858 00		$4,049 00
Glenn	1,456 00	3 00	5 00	7 50	1,471 50		1,921 00
Humboldt	13,176 00	108 00	70 00	25 00	13,379 00	2,690 00	355 00
Imperial	2,808 00				2,808 00		554 00
Inyo	10,640 00	321 00	55 00	40 00	11,056 00		954 00
Kern	15,062 00	24 00		17 50	15,103 50		1,620 00
Kings	4,750 00		55 00	3 50	4,808 50		669 00
Lake	4,318 00	12 00	15 00	5 50	4,350 50		776 00
Lassen	4,222 00	45 00	15 00	10 00	4,292 00		942 00
Los Angeles:							
Agents	204,528 00	291 00	60 00	140 00	205,019 00	2,000 00	5,500 00
Los Angeles Branch	584 00	132 00	445 00	37 00	1,198 00		62 00
Terminal Island Branch	116 00	6 00	5 00	5 50	132 50	43,080 00	10 00
Totals, Los Angeles	$205,228 00	$429 00	$510 00	$182 50	$206,349 50	$45,080 00	$5,572 00

Madera	4,214 00			9 00	4,223 00		728 00
Marin	9,780 00	6 00	150 00	17 00	9,953 00		1,064 00
Mariposa	2,100 00	27 00	15 00	4 50	2,146 50		56 00
Mendocino	7,266 00	9 00	15 00	4 00	7,294 00	1,090 00	633 00
Merced	6,806 00	3 00	90 00	16 50	6,915 50		2,915 00
Modoc	2,772 00	90 00	10 00	6 50	2,878 50		472 00
Mono	6,252 00	1,038 00	10 00	27 50	7,327 50		42 00
Monterey:							
Agents	10,292 00	15 00	430 00	12 00	10,749 00		861 00
Monterey Branch	46 00	3 00	135 00	2 50	186 50	9,890 00	4 00
Totals, Monterey	$10,338 00	$18 00	$565 00	$14 50	$10,935 50	$9,890 00	$865 00
Napa	8,002 00	6 00	30 00	18 00	8,056 00		1,627 00
Nevada	4,564 00	348 00	65 00	17 00	4,994 00		1,528 00
Orange	19,152 00	6 00	5 00	10 50	19,173 50	8,200 00	839 00
Placer	6,136 00	48 00	30 00	5 50	6,219 50		2,003 00
Plumas	6,646 00	123 00	60 00	17 00	6,846 00		497 00
Riverside	12,948 00	33 00	15 00	17 00	13,013 00		511 00
Sacramento:							
Agents	29,376 00	15 00	1,065 00	15 00	30,471 00		9,854 00
Sacramento Branch	518 00	63 00	535 00	53 00	1,169 00	1,340 00	365 00
Totals, Sacramento	$29,894 00	$78 00	$1,600 00	$68 00	$31,640 00	$1,340 00	$10,219 00
San Benito	1,274 00	6 00	35 00	7 00	1,322 00		324 00
San Bernardino	43,202 00	66 00	25 00	46 00	43,339 00		977 00
San Diego:							
Agents	48,226 00	111 00		10 00	48,347 00		564 00
San Diego Branch	100 00	39 00	65 00	7 00	211 00	16,450 00	
Totals, San Diego	$48,326 00	$150 00	$65 00	$17 00	$48,558 00	$16,450 00	$564 00
San Francisco:							
Agents	50,798 00	18 00	665 00	27 00	51,508 00		7,041 00
San Francisco Branch	640 00	87 00	1,135 00	45 00	1,907 00	19,870 00	199 00
Totals, San Francisco	$51,438 00	$105 00	$1,800 00	$72 00	$53,415 00	$19,870 00	$7,240 00
San Joaquin	25,806 00		620 00	25 00	26,451 00		4,289 00
San Luis Obispo	8,692 00	21 00	90 00	19 50	8,822 50		166 00
San Mateo	7,760 00	9 00	80 00	3 50	7,852 50		1,556 00
Santa Barbara	9,028 00	9 00	80 00	19 00	9,136 00		286 00
Santa Clara	17,510 00	9 00	185 00	16 50	17,720 50		3,139 00
Santa Cruz	8,958 00	36 00	425 00	24 00	9,443 00	970 00	748 00
Shasta:							
Agents	8,868 00	15 00	20 00	9 50	8,912 50		1,374 00
Redding Branch	156 00	33 00	90 00	11 50	290 50		62 00
Totals, Shasta	$9,024 00	$48 00	$110 00	$21 00	$9,203 00		$1,436 00

FINAL STATEMENT OF LICENSE SALES, 1944 SERIES

County	Angling licenses					Market fisherman $10 each	Pheasant tags $1 each
	Citizen $2 each	Nonresident $3 each	Alien	Duplicate 50 cents each	Total angling		
Sierra	$1,270 00	$18 00		$3 00	$1,291 00		$93 00
Siskiyou	9,984 00	540 00	$150 00	18 00	10,692 00		1,795 00
Solano	19,544 00		515 00	40 50	20,099 50	$320 00	3,866 00
Sonoma	16,550 00	21 00	295 00	32 00	16,898 00		2,319 00
Stanislaus	14,988 00	39 00	145 00	36 50	15,208 50		3,589 00
Sutter	2,570 00			50	2,570 50		998 00
Tehama	2,964 00	42 00	15 00	7 00	3,028 00		1,379 00
Trinity	1,504 00			3 50	1,507 50		14 00
Tulare	14,802 00			12 50	14,814 50		1,744 00
Tuolumne	3,958 00	27 00	5 00	9 00	3,999 00		301 00
Ventura	10,402 00	3 00		14 50	10,419 50		233 00
Yolo	3,362 00	3 00	30 00	2 50	3,397 50		3,021 00
Yuba	3,756 00	9 00		8 50	3,773 50		2,114 00
Out of State:							
Arizona	436 00	297 00			733 00		
Nevada		4,095 00			4,095 00		117 00
Oregon	86 00	153 00			239 00		481 00
Totals	$863,890 00	$9,297 00	$9,480 00	$1,174 00	$883,841 00	$108,490 00	$105,923 00
Number	431,945	3,099	1,896	2,348		10,849	105,923

FINAL STATEMENT OF HUNTING, DEER TAGS, AND TRAPPING LICENSE SALES, 1944 SERIES

County	Hunting licenses							Deer tags	Trapping licenses		
	Citizen $2 each	Junior $1 each	Non-resident $10 each	Declarant alien $10 each	Alien $25 each	Duplicate 50c each	Total Hunting	$1 each	Citizen $1 each	Alien $2 each	Total Trapping
Alameda	$34,402 00	$1,562 00		$20 00	$75 00	$77 50	$36,136 50	$10,002 00			
Alpine	114 00	8 00	$80 00				202 00	74 00			
Amador	2,128 00	162 00		20 00		7 00	2,317 00	996 00			
Butte	13,384 00	1,113 00	60 00			67 00	14,624 00	4,759 00			
Calaveras	1,792 00	145 00				3 50	1,940 50	919 00			
Colusa	4,466 00	379 00	10 00	70 00	50 00	27 50	5,002 50	1,421 00			
Contra Costa	13,620 00	589 00		60 00		27 50	14,296 50	3,950 00			
Del Norte	882 00	57 00	150 00			2 50	1,091 50	264 00			
El Dorado	3,352 00	230 00	30 00			11 00	3,623 00	1,753 00			
Fresno:											
Agents	20,210 00	1,287 00				12 00	21,509 00	6,255 00			
Fresno Ag	812 00	75 00	20 00	200 00	200 00	46 50	1,353 50	293 00	$56 00		$56 00
Totals, Fresno	$21,022 00	$1,362 00	$20 00	$200 00	$200 00	$58 50	$22,862 50	$6,548 00	$56 00		$56 00
Glenn	4,014 00	506 00	10 00			29 50	4,559 50	1,484 00			
Humboldt	11,680 00	666 00	30 00		25 00	19 50	12,420 50	5,536 00			
Imperial	5,634 00	317 00				6 00	5,957 00	380 00			
Inyo	3,698 00	269 00	30 00			25 00	4,022 00	1,633 00			
Kern	16,504 00	970 00				26 00	17,500 00	5,041 00			
Kings	4,550 00	315 00				5 00	4,870 00	1,270 00			
Lake	3,822 00	399 00		30 00		15 50	4,266 50	2,076 00			
Lassen	5,218 00	462 00	130 00	20 00		23 50	5,853 50	2,587 00			
Los Angeles:											
Agents	85,082 00	2,809 00				63 50	87,954 50	17,535 00			
Los Angeles Branch	482 00	50 00	70 00	190 00	225 00	25 00	1,042 00	166 00	74 00	4 00	78 00
Terminal Island Branch	88 00	11 00				50	99 50	29 00	15 00		15 00
Totals, Los Angeles	$85,652 00	$2,870 00	$70 00	$190 00	$225 00	$89 00	$89,096 00	$17,730 00	$89 00	$4 00	$93 00

FINAL STATEMENT OF HUNTING, DEER TAGS, AND TRAPPING LICENSE SALES, 1944 SERIES—Continued

County	Hunting licenses							Deer tags	Trapping licenses		
	Citizen $2 each	Junior $1 each	Non-resident $10 each	Declarant alien $10 each	Alien $25 each	Duplicate 50c each	Total Hunting	$1 each	Citizen $1 each	Alien $2 each	Total Trapping
Madera	$3,578 00	$221 00				$5 00	$3,804 00	$1,287 00			
Marin	5,514 00	388 00	$30 00			14 50	5,946 50	2,172 00			
Mariposa	802 00	43 00				50	845 50	395 00			
Mendocino	5,706 00	376 00		$10 00		16 00	6,108 00	2,845 00			
Merced	8,702 00	696 00				37 50	9,435 50	2,116 00			
Modoc	3,756 00	261 00	1,620 00			21 50	5,658 50	1,998 00			
Mono	1,132 00	23 00	280 00			3 00	1,438 00	533 00			
Monterey:											
Agents	9,290 00	652 00		80 00	$25 00	24 00	10,071 00	3,869 00			
Monterey Branch	106 00	1 00		70 00	75 00	2 50	254 50	5 00			
Totals, Monterey	$9,396 00	$653 00		$150 00	$100 00	$26 50	$10,325 50	$3,874 00			
Napa	7,024 00	556 00		40 00		28 50	7,648 50	3,204 00			
Nevada	4,224 00	314 00	250 00	50 00		16 50	4,854 50	2,134 00			
Orange	7,108 00	434 00				4 50	7,546 50	1,327 00			
Placer	7,254 00	603 00	10 00	10 00		18 50	7,895 50	2,934 00			
Plumas	4,424 00	269 00	90 00	10 00	50 00	10 00	4,853 00	2,294 00			
Riverside	8,200 00	655 00				25 50	8,880 50	1,819 00			
Sacramento:											
Agents	23,518 00	1,890 00		80 00	25 00	53 50	25,566 50	6,446 00			
Sacramento Branch	956 00	49 00	130 00	410 00	950 00	74 50	2,569 50	296 00	$266 00	$14 00	$280 00
Totals, Sacramento	$24,474 00	$1,939 00	$130 00	$490 00	$975 00	$128 00	$28,136 00	$6,742 00	$266 00	$14 00	$280 00
San Benito	2,580 00	265 00				10 00	2,855 00	1,219 00			
San Bernardino	10,290 00	795 00				33 00	11,118 00	1,694 00			
San Diego:											
Agents	19,180 00	1,056 00				4 50	20,240 50	5,415 00			
San Diego Branch	126 00	6 00	30 00		25 00	16 50	203 50	556 00	5 00		5 00
Totals, San Diego	$19,306 00	$1,062 00	$30 00		$25 00	$21 00	$20,444 00	$5,971 00	$5 00		$5 00

San Francisco:											
Agents	30,302 00	695 00		50 00		19 00	31,066 00	7,265 00			
San Francisco Branch	626 00	107 00	290 00	890 00	850 00	75 00	2,838 00	270 00	1,090 00	18 00	1,108 00
Totals, San Francisco	$30,928 00	$802 00	$290 00	$940 00	$850 00	$94 00	$33,904 00	$7,535 00	$1,090 00	$18 00	$1,108 00
San Joaquin	17,704 00	1,338 00				26 00	19,068 00	4,474 00			
San Luis Obispo	6,828 00	568 00				18 00	7,414 00	2,923 00			
San Mateo	7,528 00	590 00	10 00	90 00	75 00	15 00	8,308 00	1,959 00			
Santa Barbara	5,962 00	776 00	20 00	20 00		7 50	6,785 50	2,444 00			
Santa Clara	14,400 00	1,086 00		90 00	25 00	39 00	15,640 00	5,243 00			
Santa Cruz	5,318 00	439 00		220 00	200 00	23 00	6,200 00	2,126 00			
Shasta:											
Agents	8,488 00	535 00	10 00			25 50	9,058 50	4,241 00			
Redding Branch	154 00	15 00	30 00	30 00	75 00	18 00	322 00	108 00	87 00	2 00	89 00
Totals, Shasta	$8,642 00	$550 00	$40 00	$30 00	$75 00	$43 50	$9,380 50	$4,349 00	$87 00	$2 00	$89 00
Sierra	770 00	68 00	40 00			50	878 50	436 00			
Siskiyou	12,334 00	866 00	6,490 00		50 00	27 50	19,767 50	5,716 00			
Solano	12,528 00	736 00				41 50	13,305 50	3,763 00			
Sonoma	12,188 00	958 00		110 00	100 00	32 50	13,388 50	5,227 00			
Stanislaus	10,686 00	984 00	20 00	50 00		40 50	11,780 50	2,756 00			
Sutter	3,386 00	240 00				15 00	3,641 00	831 00			
Tehama	4,698 00	310 00				25 00	5,033 00	1,936 00			
Trinity	1,122 00	72 00				1 00	1,195 00	611 00			
Tulare	12,840 00	941 00				11 00	13,792 00	4,349 00			
Tuolumne	2,818 00	219 00	100 00			8 00	3,145 00	1,411 00			
Ventura	5,636 00	511 00				10 00	6,157 00	2,187 00			
Yolo	6,724 00	641 00	10 00	50 00	175 00	41 50	7,641 50	2,168 00			
Yuba	4,888 00	374 00				26 50	5,288 50	1,538 00			
Out of State:											
Arizona	118 00		20 00				138 00	8 00			
Nevada			5,920 00				5,920 00	564 00			
Oregon	514 00	13 00	9,900 00			1 50	10,428 50	715 00			
Totals	$557,964 00	$35,016 00	$25,920 00	$2,970 00	$3,275 00	$1,489 00	$626,634 00	$178,250 00	$1,593 00	$38 00	$1,631 00
Number	278,982	35,016	2,592	297	131	2,978		178,250	1,593	19	

FINAL STATEMENT OF LICENSE SALES, 1944 SERIES—Continued

County	Deer meat permits		
	Agents (lockers) $0.50 each	Wardens $1.00 each	Total
Alameda	$81 00	$36 00	$117 00
Alpine			
Amador			
Butte	137 50	46 00	183 50
Calaveras			
Colusa	45 00		45 00
Contra Costa	64 50		64 50
Del Norte	9 00		9 00
El Dorado		19 00	19 00
Fresno	210 00	10 00	220 00
Glenn	87 50		87 50
Humboldt	98 50	6 00	104 50
Imperial	23 00		23 00
Inyo	2 50	19 00	21 50
Kern	122 00	10 00	132 00
Kings	49 50		49 50
Lake	1 50	35 00	36 50
Lassen	48 50		48 50
Los Angeles	1,544 50	112 00	1,656 50
Madera	9 50	2 00	11 50
Marin	36 50	1 00	37 50
Mariposa		13 00	13 00
Mendocino	50	17 00	17 50
Merced	121 00		121 00
Modoc	6 00	4 00	10 00
Mono			
Monterey	106 00	12 00	118 00
Napa	15 50		15 50
Nevada	25 00		25 00
Orange	150 50		150 50
Placer	39 00	92 00	131 00
Plumas			
Riverside	89 00		89 00
Sacramento	179 00	11 00	190 00
San Benito	85 50		85 50
San Bernardino	55 00	2 00	57 00
San Diego	78 00	12 00	90 00
San Francisco		17 00	17 00
San Joaquin	241 00	13 00	254 00
San Luis Obispo	74 50		74 50
San Mateo	20 00	2 00	22 00
Santa Barbara	45 50		45 50
Santa Clara	199 50		199 50
Santa Cruz	37 50		37 50
Shasta	33 50	76 00	109 50
Sierra			
Siskiyou	116 50	5 00	121 50
Solano	64 00		64 00
Sonoma	62 00	7 00	69 00
Stanislaus	112 50		112 50
Sutter			
Tehama	57 50		57 50
Trinity		36 00	36 00
Tulare	169 50		169 50
Tuolumne	11 50	3 00	14 50
Ventura	55 50		55 50
Yolo	113 00		113 00
Yuba	43 00		43 00
Totals	$4,977 00	$618 00	$5,595 00
Number	9,954	618	10,572

FINAL STATEMENT OF MISCELLANEOUS LICENSE SALES BY BRANCH OFFICE AND AGENTS, 1944 SERIES—Continued

Type	Los Angeles	Monterey	Sacramento	San Diego	San Francisco	Terminal Island	Agents	Total	Number
Commercial Hunting Club:									
Citizen, $25 each					$900 00			$900 00	36
Alien, $100 each (None sold)									
Commercial hunting club operator:									
Citizen, $5 each					250 00			250 00	50
Alien, $25 each (None sold)									
Fish packer and shellfish dealer:									
Citizen, $5 each				$95 00	820 00	230 00		1,145 00	229
Alien, $20 each					20 00			20 00	1
Fish tags, 1 cent each	$360 00				3,360 00		28	3,720 28	372,028
Game tags, 3 cents each	73 98		$14 40		13 89			102 27	3,409
Fish importer, $5 each					65 00			65 00	13
Fish party boat permits, $1 each		8 00			118 00	108 00		234 00	234
Fish breeder, $5 each					240 00			240 00	48
Game breeder, $5 each	2,225 00		275 00		560 00			3,060 00	612
Kelp license, $10 each					80 00			80 00	8
Game management:									
Licenses, $10 each					250 00			250 00	25
Tags, 3 cents each	42 24		3 75		75			46 74	1,558
Antelope permits, $5 each			2,500 00					2,500 00	500

FINAL STATEMENT OF LICENSE SALES, 1945 SERIES

County	Angling licenses					Market fisherman $10 each	Trapping licenses		
	Citizen $2 each	Nonresident $3 each	Alien $5 each	Duplicate 50 cents each	Total angling		Citizen $1 each	Alien $2 each	Total trapping
Alameda	$76,404 00	$51 00	$755 00	$107 50	$77,317 50				
Alpine	378 00	261 00			639 00				
Amador	2,336 00		5 00	5 00	2,346 00				
Butte	14,006 00	81 00	15 00	42 00	14,144 00				
Calaveras	2,452 00		15 00	50	2,467 50				
Colusa	1,552 00			4 50	1,556 50				
Contra Costa	28,864 00	48 00	235 00	29 50	29,176 50	$2,670 00			
Del Norte	4,064 00	903 00	5 00	14 50	4,986 50	920 00			
El Dorado	5,748 00	162 00	25 00	15 00	5,950 00				
Fresno:									
Agents	31,978 00	3 00		17 00	31,998 00				
Fresno Branch	1,164 00	126 00	350 00	49 50	1,689 50		$40 00		$40 00
Totals, Fresno	$33,142 00	$129 00	$350 00	$66 50	$33,687 50		$40 00		$40 00
Glenn	1,858 00	33 00	15 00	11 00	1,917 00				
Humboldt	15,398 00	123 00	115 00	29 50	15,665 50	4,800 00			
Imperial	3,856 00			2 00	3,858 00				
Inyo	15,652 00	291 00	45 00	59 00	16,047 00				
Kern	19,844 00	12 00	5 00	26 00	19,887 00				
Kings	5,186 00		100 00	7 00	5,293 00				
Lake	5,482 00	15 00	5 00	10 50	5,512 50				
Lassen	4,250 00	72 00	15 00	9 50	4,346 50				
Los Angeles:									
Agents	279,526 00	294 00	145 00	157 00	280,122 00	1,280 00			
Los Angeles Branch	738 00	195 00	475 00	66 00	1,474 00		62 00	$4 00	66 00
Terminal Island Branch	122 00	15 00		5 50	142 50	44,030 00			
Totals, Los Angeles	$280,386 00	$504 00	$620 00	$228 50	$281,738 50	$45,310 00	$62 00	$4 00	$66 00

Madera	5,270 00		5 00	8 50	5,283 50				
Marin	10,992 00	18 00	165 00	20 00	11,195 00				
Mariposa	3,376 00	78 00	5 00	4 50	3,463 50				
Mendocino	11,258 00	33 00	55 00	10 50	11,356 50	490 00			
Merced	6,654 00	12 00	145 00	17 50	6,828 50				
Modoc	2,870 00	165 00	10 00	5 00	3,050 00				
Mono	9,364 00	1,101 00	35 00	39 50	10,539 50				
Monterey:									
Agents	11,292 00	9 00	515 00	23 00	11,839 00				
Monterey Branch	108 00	12 00	175 00	7 50	302 50	10,590 00			
Totals, Monterey	$11,400 00	$21 00	$690 00	$30 50	$12,141 50	$10,590 00			
Napa	9,232 00	30 00	40 00	25 00	9,327 00				
Nevada	6,022 00	378 00	60 00	12 50	6,472 50				
Orange	33,906 00	66 00		29 50	34,001 50	7,660 00			
Placer	8,360 00	210 00	25 00	11 00	8,606 00				
Plumas	7,302 00	186 00	55 00	14 50	7,557 50				
Riverside	15,438 00	75 00	5 00	23 50	15,541 50				
Sacramento:									
Agents	33,288 00	6 00	1,900 00	45 50	35,239 50				
Sacramento Branch	810 00	144 00	445 00	62 50	1,461 50	1,590 00	332 00	8 00	340 00
Totals, Sacramento	$34,098 00	$150 00	$2,345 00	$108 00	$36,701 00	$1,590 00	$332 00	$8 00	$340 00
San Benito	1,832 00	3 00	20 00	6 00	1,861 00				
San Bernardino	49,686 00	141 00	60 00	62 50	49,949 50				
San Diego:									
Agents	55,058 00	213 00		10 00	55,281 00				
San Diego Branch	138 00	93 00	20 00	12 50	263 50	21,370 00			
Totals, San Diego	$55,196 00	$306 00	$20 00	$22 50	$55,544 50	$21,370 00			
San Francisco:									
Agents	60,742 00	42 00	595 00	54 00	61,433 00				
San Francisco Branch	840 00	102 00	1,080 00	94 00	2,116 00	20,330 00	1,215 00	18 00	1,233 00
Totals, San Francisco	$61,582 00	$144 00	$1,675 00	$148 00	$63,549 00	$20,330 00	$1,215 00	$18 00	$1,233 00
San Joaquin	29,094 00	36 00	740 00	42 50	29,912 50				
San Luis Obispo	11,822 00	18 00	100 00	35 50	11,975 50				
San Mateo	10,676 00	15 00	85 00	14 50	10,790 50				
Santa Barbara	10,586 00	21 00	105 00	17 00	10,729 00				
Santa Clara	22,484 00	15 00	250 00	36 50	22,785 50				
Santa Cruz	10,654 00	24 00	365 00	44 50	11,087 50	940 00			
Shasta:									
Agents	9,738 00	60 00	30 00	20 50	9,848 50				
Redding Branch	178 00	75 00	80 00	23 00	356 00		104 00		104 00
Totals, Shasta	$9,916 00	$135 00	$110 00	$43 50	$10,204 50		$104 00		$104 00

FINAL STATEMENT OF LICENSE SALES, 1945 SERIES—Continued

County	Angling licenses					Market fisherman $10 each	Trapping licenses		
	Citizen $2 each	Nonresident $3 each	Alien $5 each	Duplicate 50 cents each	Total angling		Citizen $1 each	Alien $2 each	Total trapping
Sierra	1,560 00	30 00		5 50	1,595 50				
Siskiyou	11,422 00	774 00	140 00	20 50	12,356 50				
Solano	21,778 00	33 00	285 00	36 50	22,132 50	290 00			
Sonoma	20,762 00	57 00	270 00	54 00	21,143 00				
Stanislaus	16,264 00	36 00	115 00	41 00	16,456 00				
Sutter	2,826 00	3 00	10 00	6 50	2,845 50				
Tehama	4,312 00	30 00	5 00	21 00	4,368 00				
Trinity	1,850 00	30 00		7 00	1,887 00				
Tulare	17,262 00	42 00		15 00	17,319 00				
Tuolumne	5,126 00	45 00	10 00	10 50	5,191 50				
Ventura	12,586 00	3 00		12 00	12,601 00				
Yolo	3,862 00	21 00	70 00	7 00	3,960 00				
Yuba	4,452 00			17 00	4,469 00				
Out of State:									
Arizona	554 00	279 00			833 00				
Nevada	2 00	6,090 00			6,092 00				
Oregon	112 00	309 00		1 00	422 00				
Totals	$1,094,658 00	$13,848 00	$10,400 00	$1,755 50	$1,120,661 50	$116,960 00	$1,753 00	$30 00	$1,783 00
Number	547,329	4,616	2,080	3,511		11,696	1,753	15	1,768

FINAL STATEMENT OF LICENSE SALES, 1945 SERIES—Continued

County	Hunting licenses								Archery Deer tags $1 each	Deer tags $1 each
	Archery citizen $3 each	Citizen $2 each	Junior $1 each	Nonresident $10 each	Declarant alien $10 each	Alien $25 each	Duplicate 50¢ each	Total hunting		
Alameda		$38,758 00	$1,412 00	$30 00	$60 00		$66 00	$40,326 00		$11,694 00
Alpine		154 00	7 00	110 00				271 00		88 00
Amador		2,564 00	183 00				10 00	2,757 00		1,180 00
Butte		17,460 00	1,197 00	130 00			93 00	18,880 00		5,888 00
Calaveras		2,260 00	145 00				2 50	2,407 50		1,158 00
Colusa		5,224 00	442 00	20 00	10 00	$50 00	32 00	5,778 00		1,545 00
Contra Costa		15,584 00	651 00		30 00		28 50	16,293 50		4,727 00
Del Norte		1,556 00	66 00	290 00			2 50	1,914 50		458 00
El Dorado		4,178 00	255 00	10 00			11 00	4,454 00		2,147 00
Fresno:										
Agents		24,528 00	1,364 00				13 00	25,905 00		7,240 00
Fresno Branch		936 00	63 00	60 00	170 00	350 00	35 00	1,614 00		271 00
Totals, Fresno		$25,464 00	$1,427 00	$60 00	$170 00	$350 00	$48 00	$27,519 00		$7,511 00
Glenn		5,450 00	484 00	60 00			40 50	6,034 50		1,734 00
Humboldt		12,494 00	745 00	60 00			19 50	13,318 50		5,614 00
Imperial		6,636 00	324 00				10 00	6,970 00		457 00
Inyo		4,942 00	296 00	10 00			28 00	5,276 00		2,056 00
Kern		21,464 00	1,152 00				34 50	22,650 50		6,136 00
Kings		4,990 00	297 00				4 50	5,291 50		1,435 00
Lake		5,278 00	411 00				19 50	5,708 50		2,652 00
Lassen		6,162 00	500 00	200 00	10 00		17 00	6,889 00		3,025 00
Los Angeles:										
Agents		121,438 00	4,480 00	70 00	10 00		83 00	126,081 00		21,701 00
Los Angeles Branch	$102 00	572 00	60 00	140 00	170 00	175 00	30 00	1,249 00	$22 00	199 00
Terminal Island Branch		146 00	7 00		30 00		50	183 50		26 00
Totals, Los Angeles	$102 00	$122,156 00	$4,547 00	$210 00	$210 00	$175 00	$113 50	$127,513 50	$22 00	$21,926 00

FINAL STATEMENT OF LICENSE SALES, 1945 SERIES—Continued

County	Hunting licenses								Archery Deer tags $1 each	Deer tags $1 each
	Archery citizen $3 each	Citizen $2 each	Junior $1 each	Nonresident $10 each	Declarant alien $10 each	Alien $25 each	Duplicate 50¢ each	Total hunting		
Madera		$4,568 00	$246 00				$3 00	$4,817 00		$1,692 00
Marin		6,190 00	569 00		$40 00		12 50	6,811 50		2,505 00
Mariposa		1,022 00	37 00					1,059 00		492 00
Mendocino		8,462 00	563 00	$10 00	10 00		14 00	9,059 00		4,256 00
Merced		9,616 00	722 00			$75 00	38 50	10,451 50		2,226 00
Modoc		4,178 00	262 00	1,630 00			18 50	6,088 50		2,033 00
Mono		1,450 00	42 00	200 00			4 50	1,696 50		750 00
Monterey:										
Agents		11,196 00	752 00		110 00	125 00	26 50	12,209 50		4,530 00
Monterey Branch		12 00	6 00		40 00	175 00	1 00	234 00		11 00
Totals, Monterey		$11,208 00	$758 00		$150 00	$300 00	$27 50	$12,443 50		$4,451 00
Napa		7,958 00	566 00	30 00	80 00		28 00	8,662 00		3,490 00
Nevada		5,954 00	313 00	160 00	30 00		24 00	6,481 00		2,873 00
Orange		8,636 00	515 00				7 50	9,158 50		1,764 00
Placer		8,428 00	598 00	160 00	10 00		17 00	9,213 00		3,456 00
Plumas		4,748 00	262 00	100 00	30 00	50 00	9 50	5,199 50		2,518 00
Riverside		10,732 00	719 00				34 00	11,485 00		2,259 00
Sacramento:										
Agents		29,324 00	1,911 00		60 00	25 00	52 00	31,372 00		8,226 00
Sacramento Branch	$9 00	1,168 00	84 00	240 00	380 00	875 00	84 00	2,840 00	$3 00	350 00
Totals, Sacramento	$9 00	$30,492 00	$1,995 00	$240 00	$440 00	$900 00	$136 00	$34,212 00	$3 00	$8,576 00
San Benito		2,602 00	216 00				11 50	2,829 50		1,226 00
San Bernardino		14,354 00	1,013 00	20 00			28 00	15,415 00		3,197 00
San Diego:										
Agents	15 00	25,900 00	1,082 00				3 00	27,000 00	5 00	5,997 00
San Diego Branch		250 00	4 00	20 00		25 00	16 50	315 50		67 00
Totals, San Diego	$15 00	$26,150 00	$1,086 00	$20 00		$25 00	$19 50	$27,315 50	$5 00	$6,064 00
San Francisco:										
Agents		32,528 00	705 00		20 00		19 00	33,272 00		8,513 00
San Francisco Branch	6 00	784 00	111 00	160 00	750 00	675 00	58 00	2,544 00	1 00	345 00
Totals, San Francisco	$6 00	$33,312 00	$816 00	$160 00	$770 00	$675 00	$77 00	$35,816 00	$1 00	$8,858 00

San Joaquin		20,858 00	1,073 00				33 50	21,964 50		5,796 00
San Luis Obispo		8,248 00	587 00				28 00	8,863 00		3,342 00
San Mateo		7,992 00	485 00	20 00	90 00	100 00	25 50	8,712 50		2,496 00
Santa Barbara		7,598 00	534 00	30 00	30 00		15 00	8,207 00		2,757 00
Santa Clara		17,256 00	1,089 00		160 00	25 00	24 50	18,554 50		6,031 00
Santa Cruz		7,074 00	489 00		180 00	225 00	18 00	7,986 00		2,690 00
Shasta:										
Agents		10,040 00	636 00	50 00			35 50	10,761 50		4,854 00
Redding Branch		216 00	12 00	120 00	40 00	50 00	15 00	453 00		118 00
Totals, Shasta		$10,256 00	$648 00	$170 00	$40 00	$50 00	$50 50	$11,214 50		$4,972 00
Sierra		828 00	65 00	70 00			3 00	966 00		448 00
Siskiyou		14,900 00	836 00	9,250 00	80 00	25 00	33 50	25,124 50		6,569 00
Solano		13,614 00	703 00				36 50	14,353 50		4,203 00
Sonoma		15,702 00	1,063 00	30 00	120 00	100 00	39 50	17,054 50		6,522 00
Stanislaus		13,862 00	1,009 00		50 00		40 50	14,961 50		3,895 00
Sutter		4,420 00	331 00				14 50	4,765 50		1,061 00
Tehama		5,528 00	443 00	90 00			29 00	6,090 00		2,414 00
Trinity		1,478 00	63 00				2 00	1,543 00		770 00
Tulare		14,836 00	972 00				13 50	15,821 50		4,988 00
Tuolumne		3,258 00	244 00				12 50	3,514 50		1,632 00
Ventura		7,354 00	516 00				13 50	7,883 50		2,670 00
Yolo		8,952 00	704 00	30 00	50 00	175 00	46 50	9,957 50		2,679 00
Yuba		6,986 00	491 00				29 00	7,506 00		2,354 00
Out of State:										
Arizona		174 00	5 00	110 00				289 00		10 00
Nevada				7,730 00			50	7,730 50		759 00
Oregon		1,108 00	11 00	17,450 00			8 50	18,577 50		1,397 00
Totals	$132 00	$695,116 00	$38,200 00	$38,900 00	$2,850 00	$3,300 00	$1,608 50	$780,106 50	$31 00	$214,662 00
Number	44	347,558	38,200	3,890	285	132	3,217		31	214,662

FINAL STATEMENT OF LICENSE SALES, 1945 SERIES—Continued

County	Deer meat permits		
	Agents (locker) 50c each	Wardens $1 each	Total
Alameda	$145 50		$145 50
Alpine			
Amador			
Butte	165 50	$50 00	215 50
Calaveras	10 00		10 00
Colusa	41 00		41 00
Contra Costa	90 00		90 00
Del Norte	5 50		5 50
El Dorado	27 00		27 00
Fresno	241 00	12 00	253 00
Glenn	54 00		54 00
Humboldt	126 50	5 00	131 50
Imperial	39 00		39 00
Inyo	37 50	5 00	42 50
Kern	127 00	1 00	128 00
Kings	54 00		54 00
Lake	2 00	22 00	24 00
Lassen	133 50		133 50
Los Angeles	2,303 50	105 00	2,408 50
Madera	30 00		30 00
Marin	67 00	8 00	75 00
Mariposa	17 00	9 00	26 00
Mendocino	93 50	9 00	102 50
Merced	214 50		214 50
Modoc	56 00	1 00	57 00
Mono	8 00		8 00
Monterey	76 00	8 00	84 00
Napa	69 50		69 50
Nevada	65 00		65 00
Orange	242 00		242 00
Placer	67 00	20 00	87 00
Plumas			
Riverside	129 50		129 50
Sacramento	275 50	53 00	328 50
San Benito	97 00		97 00
San Bernardino	133 00		133 00
San Diego	142 00	17 00	159 00
San Francisco	5 00	33 00	38 00
San Joaquin	280 50	14 00	294 50
San Luis Obispo	49 50		49 50
San Mateo	130 50		130 50
Santa Barbara	86 50		86 50
Santa Clara	223 50		223 50
Santa Cruz	47 00		47 00
Shasta	124 00	29 00	153 00
Sierra			
Siskiyou	162 00	4 00	166 00
Solano	78 50		78 50
Sonoma	119 00		119 00
Stanislaus	136 00		136 00
Sutter	25 00		25 00
Tehama	32 00		32 00
Trinity		32 00	32 00
Tulare	210 50	2 00	212 50
Tuolumne	21 00		21 00
Ventura	109 00		109 00
Yolo	121 00		121 00
Yuba	64 00		64 00
Total	$7,409 50	$439 00	$7,848 50
Number	14,819	439	15,258

FINAL STATEMENT OF MISCELLANEOUS LICENSE SALES BY BRANCH OFFICE AND AGENTS, 1945 SERIES

Type	Fresno	Los Angeles	Monterey	Sacramento	San Diego	San Francisco	Terminal Island	Agents	Total	Number
Commercial hunting club:										
Citizen, $25 each						$800 00			$800 00	32
Alien, $100 each										
Commercial hunting club operator:										
Citizen, $5 each						240 00			240 00	48
Alien, $25 each										
Fish packer and shellfish dealer:										
Citizen, $5 each					$140 00	940 00	$360 00		1,440 00	288
Alien, $20 each						20 00			20 00	1
Fish tags, 1 cent each	$1 00	$660 00				4,051 00		$83 01	4,795 01	479,501
Game tags, 3 cents each		95 34		$38 07					133 41	4,447
Fish importer, $5 each						65 00			65 00	13
Fish party boat permits, $1 each			$2 00		4 00	212 00	58 00	36 00	312 00	312
Fish breeder, $5 each						320 00			320 00	64
Game breeder, $5 each		2,075 00		110 00		665 00			2,850 00	570
Kelp license, $10 each						90 00			90 00	9
Game management:										
Licenses, $10 each						20 00			20 00	2
Tags, 3 cents each		8 16		99					9 15	305
Antelope permits, $5 each				2,500 00					2,500 00	500

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